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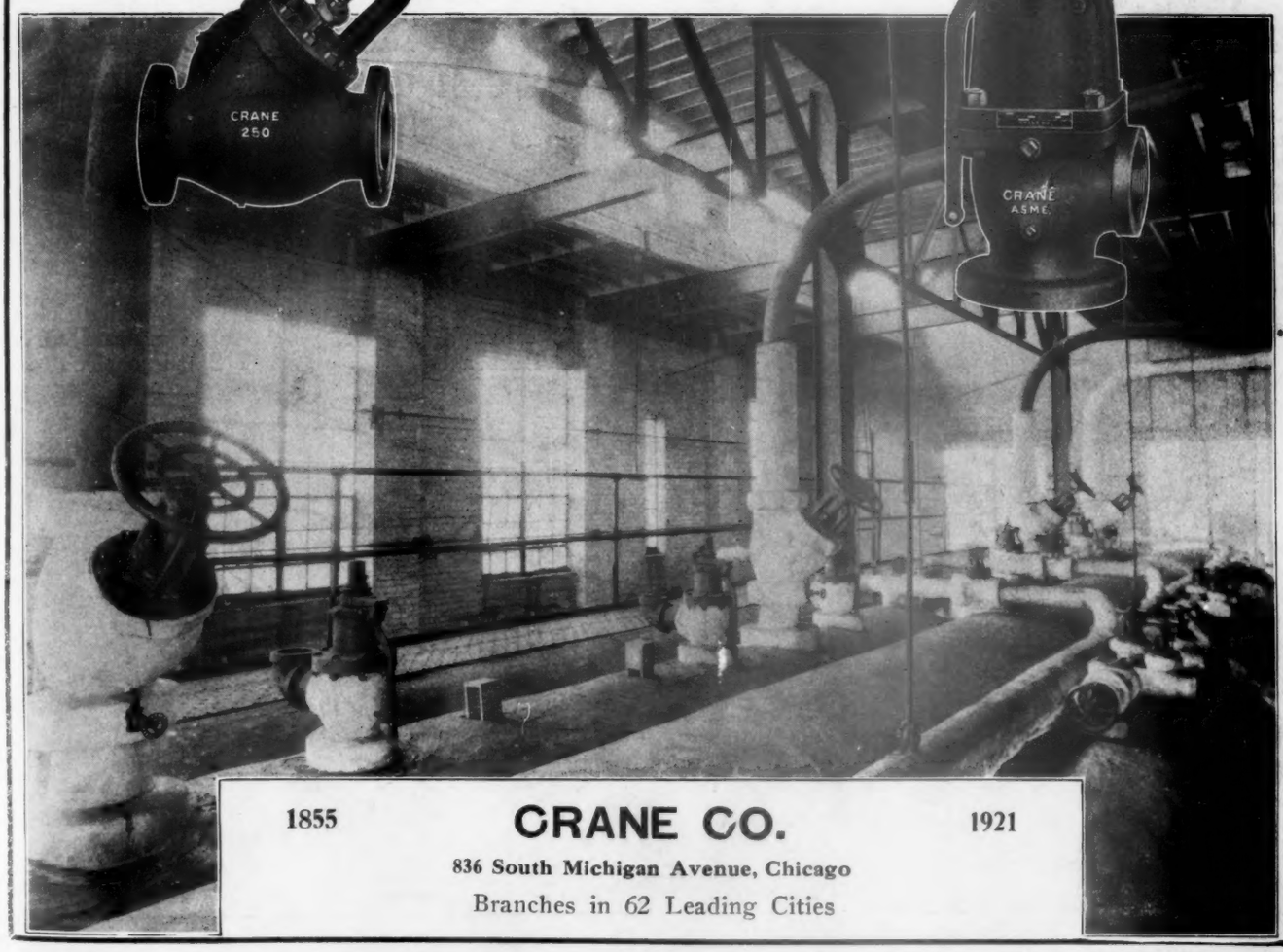

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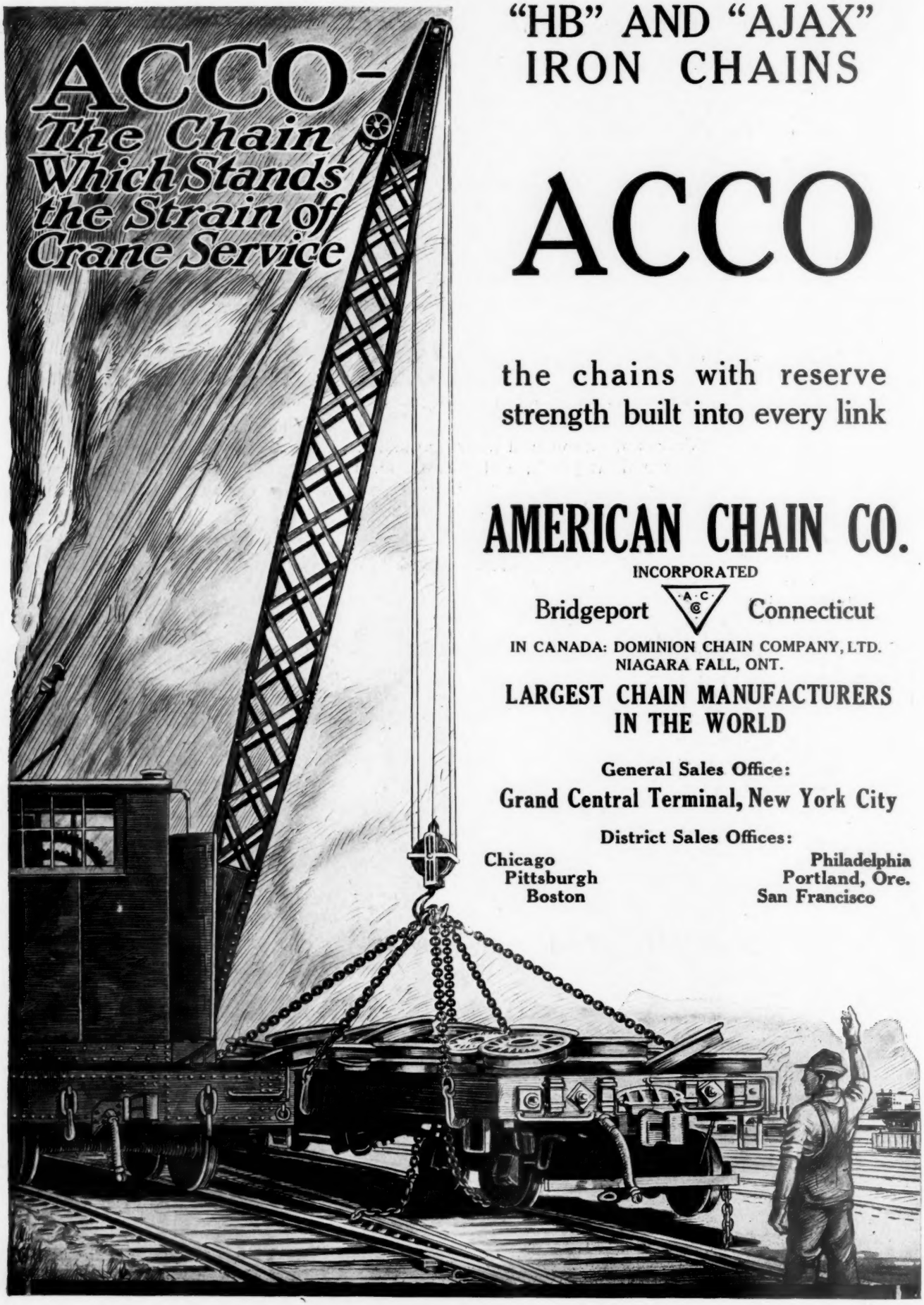

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Railway Age

EDITORIAL

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"An engineman going forty miles an hour can attend to and understand one signal when he might be confused by two." This statement, although made on October 17, 1866, by Ashbel Welch, general president and chief engineer of the United Companies of New Jersey, is equally true today. With this thought in mind it would be well for railway managements to require a survey to be made to determine just how many potential danger points may exist where there is a possibility of a clear signal of one type being confused with a stop signal of another type located in line with or near the first. For example, many places exist where a train order signal is in line with a home signal at an interlocking plant, or an automatic signal governing in the same direction as the home signal is located in advance of the home signal a short distance beyond the crossing or junction point at an interlocking plant. Locations such as these are potential danger points and steps should be taken to correct them. This may be accomplished by interlocking the train order signal with the home signal or making other provision to remove the possibility of its light being mistaken for the home signal indication. When an automatic signal is located a short distance in advance of a home interlocking signal it would appear advisable to have the automatic signal indicate stop at all times when the home signal governing across the plant indicates stop. While it may never be known definitely that the train order signal at Porter, Ind., contributed to the accident it was a potential danger point that existed and still exists, not only there but at many other places.

Potential Danger Points

The Pennsylvania Railroad has begun publishing a bulletin, entitled "Pennsylvania Standard," which is being circulated among its employees, telling the facts about the railroad situation in general and that of the Pennsylvania in particular. One of the main reasons for the strained relations now existing between most railways and their employees is that for years large quantities of literature mis-stating the facts about private railroad management and the railroad situation have been circulated among employees. The Pennsylvania and other railways which are beginning to send out literature of their own, telling the employees the real facts and giving them the point of view of the managements, are acting wisely. The loyalty and morale of railway employees will never be fully restored until they have been given opportunity to know the true policies of the managements and the reasons for them. They must be given the truth regarding the actual earnings of the companies, the amounts paid out in wages and in interest and dividends, the effects of working rules that destroy efficiency, and all those other matters regarding which the Plumb Plan League and other organizations are making persistent and successful efforts to mislead the employees. The employees will soon detect a wide discrepancy between the statements of their officers and those of the Plumb Plan League, for example. The more intelligent of them will be sure to investigate and find out who is telling the truth. When every railway company makes the same effort to educate and win the loyalty of its employees that other organizations are making to mislead them and destroy their loyalty, the relations between the companies and their men will speedily begin to improve.

Telling Employees the Facts

With the present high labor costs and the necessity of rigid economy in every department the matter of increasing the efficiency of railroad offices is one of great importance. The constant difficulty in improving conditions is the determination of just what methods in the office are susceptible of profitable change and whether proposed changes in methods or equipment will effect economies sufficient to justify the innovations. The problem is one of securing authoritative information concerning (1) the effectiveness of the system in use, (2) the performance which can be expected of changed methods or the introduction of new devices, and (3) the cost of the change. To assist in obtaining this information the New York Central has appointed an investigating committee of officers who have had long experience in office management. This committee is empowered to make whatever investigations it may desire in any office and to report its findings. With this full authoritative information at hand the probable effect of proposed modifications in method or appliances can be accurately estimated. After the several months of its existence the committee, whose activities are described in more detail elsewhere in this issue, has already given valuable service in determining the savings to be effected by the installation of dictating machines in the accounting offices of the company at Grand Central station. Greater economies are of pressing necessity to the railroads today and it may be expected that the activities of this committee in bringing about increased efficiency, which is measurable before the changes are made, will be followed with considerable interest.

Investigating Office Efficiency

What is the average time between heavy repairs or rebuilding of freight cars on your road? Suppose it is seven years for wooden cars. Then 14.3 per cent of these cars should be put through the shops for such repairs each year. If a lesser number is repaired some cars must lie idle, or if temporarily patched up so as to get over the road without falling apart, they are "living on their vitals"; this in the last analysis is a mighty expensive proposition and one which cannot possibly be justified in these days when every cent must be made to count. Unfortunately, even railroads which had a well-defined, business-like policy of maintenance of their freight cars before this country entered the war, found it necessary to depart from such programs to a greater or less extent. This means that the programs for the next few years must be speeded up—possibly to the extent of making heavy repairs to 28 per cent of the cars each year instead of 14 per cent in the example noted above. What will happen if the roads generally do not do this? Considering the small number of new cars which are being added this year, the deferred maintenance which has already accumulated and the intensive use which has been made of the cars, it would appear that real disaster lies ahead unless some such policy

Car Repairs on a Business Basis

as that above suggested is adopted promptly. Figure it out in your own case. Can you afford not to have such a policy put into immediate effect?

A Plumb Line Out of Plumb

Glenn E. Plumb is using a characteristic argument in his effort to demonstrate that high wages are not responsible for the high freight rates. In a speech before the conference of shippers at Chicago recently—and he has used the same fallacious reasoning elsewhere—he said that the railroads have nullified the effect of the wage increase of last summer by laying off 30 per cent of their employees, thus reducing the payroll by more than the wage advance, but that they are still collecting the "rates" raised in part to meet the wage advance. Mr. Plumb's figure of 30 per cent for the number of men laid off seems rather high but at any rate there is no dispute about the fact that the shippers have "laid off" over 30 per cent of their shipments and that the revenues produced by the rates have, therefore, been reduced by more than 30 per cent. The *rates* of wages have not been reduced, although less men are receiving them, any more than the rates for transportation have been reduced, because they are paid on a smaller volume of traffic.

A Graphic Portrayal

Railroad executives are exceedingly busy men. Their time and energy should be conserved wherever possible and yet they must have always in mind an accurate and vivid picture of exact conditions and tendencies in their departments or on their properties. Graphic charts have come into more and more extensive use in recent years for interpreting at a glance facts which would require pages and pages of figures and explanations. Still greater use, however, can be made of graphics. Subordinate officers can oftentimes get their arguments over and make their cases clear if instead of voluminous reports of words and figures—not always logically assembled—they will present the facts in the form of charts or diagrams. Sometimes, indeed, if they tried to do this they would decide not to go ahead with their recommendations. Waste, lost motion and useless expense must be eliminated from railroad operations. Officers and foremen must think straight and their decisions must be based upon facts as to actual conditions. Masses of undigested figures and data mean nothing, or less than nothing. Why not apply common sense and science to the problem of digesting them so that they will talk for themselves? Possibly some of our readers would like to send in examples of applications of graphics which have been helpful to them.

The Acid Test

"In developing a new practice or a new design on our road it is first submitted to one searching question—Will it make money, directly or indirectly, for our company? If it will not, it is immediately dropped." Thus spoke a mechanical department officer of a large road—a man, by the way, who has made good in no small degree. He has a keen analytical mind, is a good engineer, and deals in facts. Such a man must of necessity have a good imagination in order to look ahead and get out of the rut which is often so deeply worn in railroad work. When it comes to applying the above test, it is not done in a guesswork or haphazard manner. Rather, the facts are marshaled in such a way as to present the results naked and free from any fads or fancies. If a new practice or design can fully justify itself it is adopted; it is not dismissed from mind, however, when adopted, but checks are made from time to time to be sure that it justifies itself on the larger scale. If the so-called improvement is not reflected in the financial balance sheets somebody has made a mistake. After all, this is the acid test to which every railroad department and operation should be subjected. It eliminates the useless tinsel and furbelows. It gets work out of many deeply worn ruts—often so deeply worn as greatly to hamper and restrict progress.

Incentives for Greater Shop Production

The incentives which induce men to labor in railroad shops, or any branch of railroad or industrial service, may be summed up as wages, opportunity for training and advancement, and confidence in the security of their positions. Under present conditions, the third of these factors has little effect on the personal efficiency and output of workmen, since it is practically impossible to discharge a man as long as he reports for work and does not absolutely refuse to obey orders. The first two incentives mentioned, however, may or may not provide increased shop production, depending upon conditions. It is only human to expect a special reward for unusual endeavor, and production managers throughout the country have found the installation of bonus or piecework systems, whereby wages are proportional to the work done, an effective method of increasing the personal efficiency and output of workmen. While there is no pressing need at present for greater railroad shop output, it is undoubtedly true that within a few months at the most the railroads will once more be working to capacity, and will want to install every possible capacity and efficiency-increasing method in railroad shops. One of the strongest arguments against the continuance of the national agreements is the fact that they prohibit piecework and eliminate the incentive for greater individual output. Ordinarily, the opportunity for securing training and advancement impels ambitious workmen to strive for higher positions, but railroad shop managers are denied the benefit of this incentive also, since, under the national agreements, promotion must be made in accordance with seniority rules and length of service. It is time that the capacity decreasing rules and regulations, promulgated by the national agreements, be revoked and railroad shops brought up to the same standard of efficient, economical operation as other industrial plants.

"Hoist with Their Own Petar"

There never was a better example of men being "hoist with their own petar" than has been afforded within the last few days before the Railroad Labor Board at Chicago. The labor leaders got the Labor Board to subpoena Thomas DeWitt Cuyler, chairman of the Association of Railway Executives; C. R. Gray, president of the Union Pacific; General W. W. Atterbury, vice-president of the Pennsylvania Railroad, and Robert S. Binkerd, assistant to the chairman of the Association of Railway Executives. Their purpose was to try to give the Labor Board and the public, through the testimony of these railway officers, the impression that a majority of the railway executives originally favored the national agreements. The records of the association and the testimony of the witnesses proved beyond question that while a minority of the executives at one time, as a matter of expediency, favored acting with the labor unions in establishing national boards of adjustment, they have throughout unanimously opposed continuing the national agreements, with their effect of establishing the same rules and working conditions for employees on all railroads. Mr. Gray had been among those who favored national boards of adjustment.

but his testimony, based upon his experience as director of operation of the Railroad Administration, and also as a railway executive having charge at different times of railways in almost every part of the country, was one of the most crushing attacks ever made upon national agreements. There can be no defense for the policy of delay after delay which has prevailed in the hearings on national agreements. The labor leaders have had ample opportunity to present their case, and they ought to be required briefly to make their rebuttal to the evidence and arguments offered on behalf of the railroads and quit. In calling the railway officers mentioned, however, the labor leaders certainly gained nothing but delay. They did not strengthen, but greatly weakened, their case.

Railroad Clubs Active

Increased activity on the part of the railroad clubs has been most noticeable during the present season. This is probably largely due to the fact that they have quite generally broadened their programs. For some reason, most of these clubs formerly devoted the greater part of their attention to highly technical subjects, largely mechanical. The tendency during recent years has been to present better balanced programs, either for single meetings or for all of the meetings of the season, those appealing to larger groups. The educational value has thus been greatly increased. Instead of a handful of men at a meeting most of the clubs now have average attendances of 300 or more. Grant Hall, vice-president of the Canadian Pacific, at a recent meeting of the Canadian Railway Club, emphasized the value of this tendency and spoke for the presentation of subjects which would be of general interest and would help the members to get a better idea of railroad operation as a whole. It has been suggested also from several quarters that the clubs should give more attention to drawing out the younger men. Not a few instances can be cited of men who are now at the head of the railroad and railroad supply professions who got their first real start upward because of the attention which they attracted to themselves in reading papers before railroad clubs or taking part in the discussions. It is the younger members also who will profit most by the broadening out of the programs, since it will give them a better idea of the work of the other departments and as to how the various departments should co-operate and work together for the only purpose for which the railroads exist (although some departments and employees do not always seem to realize it)—to furnish transportation.

The Panama Canal Again a Factor

IN THE maze of labor, financial and other problems confronting the railways, a development of another character is now taking place concerning which few railway men are informed, but which would attract marked attention in normal times. This is the increasing tendency of traffic between the eastern and western coasts of the United States to move through the Panama Canal. Particular interest is attached to this tendency because of the recent experimental shipment of citrous fruit by this route, a boat arriving in Philadelphia on February 2 with 800 cases of oranges and 1,200 cases of lemons from Los Angeles. This shipment required 21 days and the fruit is reported to have shown a considerably smaller loss than is normally experienced in rail movement. In view of the marked reduction in transportation cost by this route and the demonstration of ability to deliver this fruit at distant ports in a comparatively favorable condition, the experiment is of great interest to railway men. Already a number of the large boat owners are planning to enter into an aggressive campaign for this business and they have promised to cut their schedule to as low as 17 to 19 days between southern California and north Atlantic coast points, as compared with a minimum of 10 to 12 days by rail schedule.

At the time when the Panama Canal was completed, much attention was given to the possibility of the movement of a large part of the coast-to-coast freight by water. Boat lines were established and rates were so adjusted that freight from points as far removed from the Atlantic seaboard as Wisconsin, the Ohio valley and the Pittsburgh district was moving by rail to the Atlantic seaboard and then through the canal to Los Angeles, San Francisco and Puget Sound ports. This traffic was developing rapidly when this country entered the war, and it became necessary to take the boats out of this service. The boats are only now returning, and railway men may therefore expect to see the full effects of water competition as they have not before observed them.

That the stake is a large one is indicated by the fact that the citrous fruit movement from southern California alone aggregates over 50,000 cars annually. This fruit is delivered to the roads in large quantities so that it is handled in train load lots. It carries a high rate and demands expedited movement. It is long-haul traffic, practically all of it moving to points east of the Missouri river and much of it to the Atlantic seaboard. It and similar traffic from the west coast and the corresponding merchandise movement westbound constitute a large part of the business which the railways haul across the long mileage of intervening desert. With the increased freight rates now in effect, the competition has become all the more difficult for the railways to meet, for the cost of transportation by water has not risen to the same extent as by rail.

The Public's Representation on the Labor Board

THE AMERICAN public may well soon begin to question whether it has adequate and competent representation upon the Railroad Labor Board. The railway companies have three representatives on the board and the employees three. The other three members were appointed to represent the public, and they hold the balance of power.

The board's handling of the question of national agreements thus far has afforded a striking contrast to the way it handled the wage case a little over a year ago. When it was appointed on April 13, 1920, demands of the employees for advances of $1,000,000,000 a year in wages were pending. It commenced hearings on April 19 and closed them on June 4. The board was new to its task and the amount of money involved was enormous. Nevertheless, on July 13, exactly three months after it was appointed, the labor brotherhoods got President Wilson to send it a telegram saying an emergency existed, and urging it to make an early decision. That emergency was created by the fact that the labor leaders were threatening the country with strikes unless an award was quickly made. The board on July 20, just three months after it began hearings, awarded the largest advance in wages ever given to one class of workingmen at one time in the history of the world.

In its wage award on July 20, 1920, the Labor Board took jurisdiction of the subject of national agreements. In announcing on December 18 that hearings regarding national agreements would be resumed on January 10, it notified the labor leaders of its understanding that they had presented their case in favor of national agreements in the wage hearings. They had had five months to get ready any additional evidence they might want to introduce. On January 10 the labor leaders, after making a general and indiscriminate attack upon railway management, said they rested

their case. The railways took less than a month to present their case against national agreements. Over a month has now elapsed since they finished, and the labor leaders have not even begun to present their rebuttal regarding the shop crafts agreement, the most important one under consideration.

Last week the labor leaders had four railway officers called as witnesses in an attempt to show, not that national agreements are reasonable or desirable, but that the railway executives had differed regarding their desirability—a point not remotely germane to the matters in issue. They completely failed in this. The testimony of the railway officers showed that the railway executives had differed upon the expediency of establishing national boards of adjustment, but always had been unanimously opposed to national agreements.

The labor leaders having failed to find in their fishing expedition among the files of the Association of Railway Executives the evidence for which they were looking, it is high time to ask when the Railroad Labor Board intends to require them to introduce any evidence they have in defense of the shop crafts agreement. They have not yet introduced a scintilla of evidence actually bearing on that subject. The game they are playing has long been perfectly plain to others. It must now be plain to the Labor Board. They are trying to add delay to delay, because every day's delay means another day in which the national agreements are kept in effect, and because apparently they hope that something ultimately will turn up which will save them the necessity of squarely meeting the issue presented in the controversy.

It took the Railroad Labor Board only three months to hold hearings and reach a decision awarding an advance in wages which statistics of the Interstate Commerce Commission now show amounted in July to $59,946,608, or at the annual rate, not of $625,000,000, as originally estimated, but as we have said, of almost $712,000,000. Since it took only three months to ascertain it was reasonable to add $712,000,000 a year to what the public must pay in freight and passenger rates, why should it take any longer to settle the question of national agreements, which, important as it is, does not directly involve anywhere near as much as did the advance in wages? If, however, the Labor Board continues to permit the labor leaders to carry out their policy of adding delay to delay, it will take not merely three months, but twice or three times three months, to settle the question of national agreements.

Settlement of the wage question was expedited because an emergency existed. A much greater emergency exists now. The entire railroad system of the United States is threatened with bankruptcy because of grossly excessive operating expenses. The Railroad Labor Board, by its control over wages and working conditions, controls 65 per cent of all railroad expenses. It must determine the question of solvency or bankruptcy for many railroads. The national agreements alone may mean the difference between solvency and ruin to many. Bankruptcy of a large number of railroads would not only bring disaster to many thousands of individual railroad security owners, but would pull down many life insurance companies, trust companies and banks, with disastrous effects to the holders of life insurance policies, to investors and depositors in the trust companies and banks, and to the entire public.

The public has a direct and vital interest in the work of the Railroad Labor Board. It has a right to expect and demand that the public members of the board will energetically and faithfully represent, protect and promote its interests. In the hearings upon national agreements, however, the public members, or a majority of them, have yielded to almost every demand of the labor leaders, however unreasonable. They have agreed to almost every delay the labor leaders have asked, and, with the railway situation the most critical ever known, have allowed them to take weeks of time loading up the record with testimony having no bearing whatever on the reasonableness of national agreements. More time has elapsed since the hearings were resumed on January 10 than the entire time taken in the wage hearings.

Spokesmen for the railways have claimed that the national agreements are causing inefficiency and waste, that they add approximately $300,000,000 a year to railway operating expenses, or over $820,000 a day. No wonder the labor leaders desire to protract the hearings! They would be glad to have them continue forever. The public, which, directly or indirectly, is paying the bill, has not the same reason for desiring them to be protracted indefinitely.

The determination of whether the indefensible delays shall be stopped and a reasonable decision speedily reached is entirely in the hands of the public members of the board; and the time has arrived when the public may well ask whether the public members feel the same solicitude for its interests which they displayed for the interests of labor when eight months ago they expedited the decision granting advances in wages.

Standardize the Classification of Old Bridges

ANY RESTRICTION placed on the use of a railroad bridge is a matter of serious import to the traffic, operating and maintenance of way departments. The responsibility for such restriction rests with the engineering department, or, more correctly, with the bridge engineer. Apparently few people outside of the offices of the latter appreciate the complex nature of the calculations necessary to determine what stresses are set up in a bridge structure by a given locomotive or car. There is no satisfactory short cut by which approximate results may be obtained on the spur of the moment. By the same token a mere statement of the weight of the locomotive and maximum axle concentration do not provide the bridge engineer with the information he requires to make his decision. This is particularly true in those critical cases where the capacity of the bridge is being extended to the limit and it becomes a close question whether or not the load may be allowed on the structure. Another complication imposed in the work of the bridge engineer arises from the fact that he is frequently called upon to pass judgment on bridge loadings on very short notice, when it becomes, as a consequence, almost physically impossible to complete the necessary computations in the time available for the work.

Because of these considerations it seems highly desirable that some plan be promulgated, whereby the load-carrying capacity of all bridges and the bridge-stressing effects of all equipment could be reduced to some common standard and simple comparisons could be made which would give the bridge engineer immediately all the information he requires in passing judgment on the handling of a given piece of equipment over a bridge. Fortunately, such a standard measure of bridge stressing effect is available in the hypothetical Cooper "Class E" locomotive and train loadings. While these have been applied almost universally for the last 20 years or more in the design of railroad bridges, they have had but limited application in the investigation of old structures. Certain roads, however, have had this system in effect for some time and the manner of its use is described in a paper by C. F. Loweth, chief engineer of the Chicago, Milwaukee & St. Paul, an abstract of which appears elsewhere in this issue. This system is now under consideration by

the Committee on Iron and Steel Structures of the American Railway Engineering Association and it is expected that the next report of this committee will have something to offer with respect to its application.

As already stated, the question is of importance to many departments of a railroad. It has a particular bearing on the interchange of equipment between roads such as arises in the dead-heading of new locomotives on their delivery from the manufacturer, the detouring of foreign trains in the case of wrecks or washouts or the handling of heavy machinery, War department ordnance or other unusual loading. It is to be hoped that the steel structures committee will be able to formulate a plan whereby some such common standard of bridge classification may be adopted.

The New England Situation

THE SITUATION confronting the New England railroads has been given so much publicity of late that there is probably no student of railway affairs who does not realize that these carriers are in a most precarious position. They are meeting all the difficulties resulting from the 26 months of federal control and the aftermath thereof. They are equally subjected to the inequitable rules of the national agreements and to the handicaps resulting from the present high wages of railway employees. Besides, they have some severe problems of their own. These several matters have been brought out in the hearings in the case on rate divisions. They are now again being brought to the fore in the hearings before the governors' committee of the New England states at Boston.

Briefly, the problems confronting the New England roads, which are additional to those confronting all the railroads, may be said to lie in the facts that the New England roads are terminal carriers and that they have to pay very high prices for fuel. Because of the nature of their territory they render a service very much in the nature of a switching service. As terminal roads they are subjected to large payments in the form of per diem and it is generally accepted that terminal labor costs have risen out of proportion to other increases in labor costs. The prices they have been paying for coal have increased 164 per cent over the test period. The Maine Central, whose annual report is reviewed elsewhere in these columns, has been subjected to an increase of 238 per cent in its fuel costs; coal which cost about $3.60 a ton at Portland, Me., before federal control cost during 1920, $10.00 or more a ton.

The New England roads have sought in the divisions case to secure what they believe to be more equitable divisions on through traffic exchanged with the trunk lines, and this case is now pending. In the meantime they have also sought to secure from the trunk lines cash payments to compensate for the too low divisions of the past. The sum of $25,000,000 was suggested at first, but with the falling off in business another agreement has been suggested on the basis of $15,000,000 annually to February 28, 1922, to be prorated among the carriers west of the Hudson. Even this part of the program seems to have met a snag, and it seems to be making little progress. The latest proposal for relief has been put in the form of a suggested 10 per cent increase in freight rates and passenger fares to continue in effect concurrently with the payment to be made by the trunk lines, or until February 28, 1922. This increase is to apply on local traffic and on the New England proportion in the case of through traffic. Coal and coke are excepted because of being raw materials, and export and import traffic is also not included where it comes in competition with other ports. It is hoped that this increase may permit increased revenues of $23,000,000 yearly for the New England roads as a group: $9,000,000 from passenger revenues, $8,000,000 from freight within New England and $6,000,000 on freight crossing the Hudson river.

The governors of New England have turned this proposal over to an advisory committee which is to investigate and to report back to the governors for action. This committee of 30 members has been in session at Boston and it has already developed some interesting facts. The most important of these is that the shippers of New England are up in arms. Their spokesmen have pointed out that New England industry cannot stand this increase; they show that even the present high rates are driving traffic to the motor trucks which are now in a position to compete at many points, even on the basis of rates and cost of service. At the same time there has been evidenced a rather derogatory attitude towards the most important carrier, the New Haven. Edgar J. Rich, counsel for the Associated Industries of Massachusetts, has gone so far as to say that he doubted if anything could save the New Haven from receivership and that a receivership would not be deplored. William H. Chandler, transportation expert of the Boston Chamber of Commerce who incidentally is also president of the National Industrial Traffic League, has similarly criticised the New Haven. He has complained that the New England roads are not efficiently managed and he declares that the case should go to the Interstate Commerce Commission for the purpose of a thorough investigation of operation. His remarks about the lack of co-operation on the part of the New York, New Haven & Hartford were especially caustic, although he did speak well of the other New England carriers.

Mr. Rich, who was formerly counsel for the Boston & Maine, is a man who speaks with authority, but we are not among those who agree with him that a receivership is necessary for the New Haven. As far as Mr. Chandler is concerned, the comment might be made that it is most unfortunate that the New Haven should not have the regard of the shippers in New England in greater degree than it has. No one can deny that the larger share of reforming the present difficult situation in New England is in the hands of the shippers and people in general of New England. It is true that under the old Mellen regime, the New Haven was not noted as worrying particularly about the regard in which the railroad was held by the shippers around Boston. Mr. Pearson, the present president of the New Haven, has worked some revolutionary changes in the operation of the New Haven. Presumably Mr. Chandler realizes this fact; he should also realize that the organization of a railroad is so large and complex that it cannot be changed completely in but four or five years.

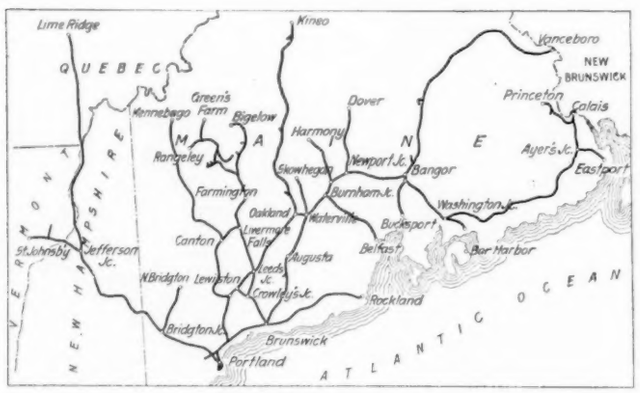
As far as the charge that the New England roads are inefficiently operated is concerned, an investigation would without doubt show the opposite of what the shippers have in mind. The New England roads are naturally not as efficiently operated possibly as the Lackawanna or the Illinois Central. The improvements that have been made in the operations of the Boston & Maine under President Hustis and in those of the New Haven under Mr. Pearson are, however, noteworthy and there is no question but what their efficiency in management has increased markedly in the past several years.

Those who read these comments may contend that they but touch on the edge of this big question. That is all they are intended to do. The condition in which the New England carriers find themselves is a serious one and it is not yet near solution—and it needs the proper solution because on the welfare of the New England carriers depends the welfare of one of the leading centers of industry and population of the nation.

Maine Central

IN THE OLD DAYS, prior to the time that Wilhelm Hohenzollern announced his intention of trying to run the whole world, it used to be one of the features of government ownership and operation of the Prussian State Railways that these lines returned a large profit which was applied toward the expenses of the state. It may surprise some of our readers to learn that a condition somewhat similar—though, of course, in different degree—exists in one of the states of our own United States. That state is Maine and the railroad system is the Maine Central. In the year 1920 this railroad returned to the state an income of no less than $795,907 in the form of an excise tax based on 5½ per cent of the gross transportation receipts within the state. This is a handicap which the company has to meet besides those other difficulties attendant upon the aftermath of federal control and those characteristic of the recent railway developments in the New England section.

The total amount paid in taxes by the Maine Central in 1920 was $1,163,289, of which $795,907 was for the excise tax mentioned; $101,767 for city and town taxes; $201,194 for federal taxes, etc. The total mentioned was in excess of the $1,014,423 paid as interest on funded debt, in excess of the $905,591 paid as rent for leased roads or of the $653,166



The Maine Central

paid in dividends on the common and preferred stocks. It would be difficult to find a tax of any kind that would work more inequitably under the conditions of railroad operation which existed in 1920 than an excise tax on gross receipts. The year just past has been characterized by great increases in gross income and decreases in net. The excise tax by expanding with the gross, increases to that extent the decrease in net income. In the case of the Maine Central the result was that despite the fact that the property was operated at a deficit for the year, the amount paid under the excise tax was considerably greater than in 1919; it was nearly 50 per cent greater than in 1917. Conditions in 1921 will probably present no improvement. The legislature of Maine has been asked to grant relief to the extent that for the years 1921, 1922 and 1923 the state excise tax should not exceed that assessed in 1917. Hearings were held in February, but the railroad's proposals were rejected.

The Maine Central operates 1,215 miles of line, the greater part of which is in Maine. Of this line, it owns 654 miles, including the main lines from Portland to Bangor and Waterville; it leases 546 miles and operates 15 under trackage rights. It is an independent property and is owned principally in Maine. On January 25, 1921, of its 2,247 common stockholders, 1,644 were residents of that state and owned 80,415 of the total of 120,069 shares. Of the 30,000 shares of preferred stock, 27,362 shares were held in Maine.

The territory served by the Maine Central is rather sparsely settled and lacking in density of traffic. It is, however, well wooded and watered and the soil is well adapted to agricultural development. Products of forests constitute over one-fourth the total tonnage carried. The total tons of all traffic moved in 1919 were 8,753,065. The largest single item was pulpwood, 1,269,963 tons, with lumber second, 1,216,352 tons. Other commodities carried in volume included bituminous coal, 907,741 tons; paper, 710,972 tons; potatoes, 602,606 tons.

The Maine Central, up to the period of federal control, was considered the only prosperous road in New England. It was conservatively capitalized and well managed and it had paid regular dividends of 6 per cent or more without fail. The road is still conservatively capitalized and its management has not changed, but the conditions accompanying the return of the roads to private control have prevented the continuance of this enviable dividend record. Three quarterly dividends were declared in 1920 on both the common and the preferred, but the directors did not feel that the operations subsequent to the guaranty period ending August 31, 1920, warranted further payment of dividends so neither dividend was declared. The Maine Central is, therefore, properly one of the roads that were parties in the New England divisions case and the reports of its operations are properly included as exhibits in the hearings before the governors' committee which is now investigating the feasibility of a 10 per cent increase in rates in New England.

The operations of the road in 1920, including the two months of federal control, the six months of the guaranty period and the four months subsequent thereto, showed an operating deficit for the year of $2,340,030 as compared with a similar deficit in 1919 of $1,231,426. The corporate income account in 1919 showed a surplus income balance of $185,884 after the payment of $1,050,888 in dividends. In 1920 the dividends totaled only $653,166 and there was a deficit of $367,871.

The Maine Central is confronted with the same handicaps which are presented to the other New England lines. Its operating expenses in 1920 were nearly three times as great as during the test period and since 1917 its wage bill has increased nearly $9,000,000 yearly. Coal for the Maine Central is received principally at Portland, Me., by water from Port Richmond and Curtis Bay. Coal which formerly cost $3.60 per ton, in 1920 cost nearly $10.00 a ton. The total tonnage used is about 432,000 tons yearly so that the increase in cost since 1916 has been nearly $3,000,000.

The total freight revenue of the Maine Central in 1920 was $14,312,998 as compared with $11,268,063 in 1919. The ton-mileage was 948,186,188, an increase of 51,535,770 over 1919. The average haul was 108 miles and the average revenue per ton per mile 1.51 cents. The passenger revenue totaled $5,360,708 in 1920 as compared with $4,906,039 in 1919. The number of passengers carried in 1920 totaled 4,099,701; the average journey was 41 miles and the average revenue per passenger per mile was 3.188 cents.

The figures of operation as between 1920 and 1919 are as follows:

	1920	1919
Mileage operated	1,215	1,215
Freight revenue	$14,312,999	$11,268,063
Passenger revenue	5,360,708	4,906,039
Total operating revenues	21,357,508	17,525,178
Maintenance of way and structures	4,040,659	3,086,323
Maintenance of equipment	5,053,469	4,143,196
Traffic expenses	173,783	146,411
Transportation expenses	12,626,609	9,571,955
General expenses	611,651	525,880
Total operating expenses	22,675,123	17,611,806
Taxes	1,163,289	1,098,313
Net railway operating income	Def. 2,485,331	Def. 1,185,835

The following gives in brief the corporate income account:

	1920	1919
Gross income	$2,766,924	$3,222,968
Total deductions from gross income	2,462,491	2,136,997
Net income	304,433	1,085,971
Dividends	653,166	870,888
Income balance	Def. 367,871	Sur. 185,884

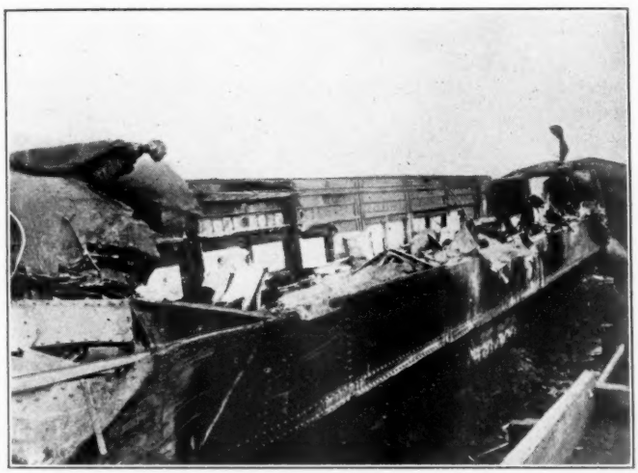
The Safety of Passengers in Steel Railway Cars*

A Discussion of the Action of Cars in Accidents and Methods of Avoiding Telescoping

By Frank M. Brinckerhoff

THE GENERAL ADOPTION of steel in place of wood in the construction of passenger train cars some 15 years ago marked a distinct advance in the art of car building. Various problems arose during the change, and many have been successfully met. The two most important problems to be solved were and still are: safety of passengers and weight of complete car.

That some steel passenger cars are heavier than the wooden ones which they displace in service, seems to be indicated by the significant fact that the adoption of steel passenger train cars was frequently accompanied or closely followed by the purchase of heavier locomotives to handle the new passenger equipment.



Wreck of a Derailed Chair Car Which Side Wiped a Standing Locomotive

To successfully defend the passenger space against invasion in side wiping collisions and derailments, strong sideposts must extend from side sill to roof and all the side frame members must be co-ordinated to ward off the colliding body.

It is not the intention at this time to discuss the economic consequences of the increased weight of steel passenger train cars, though that aspect is, of course, very important.

With regard to the problem of safety of passengers, I wish to present in a condensed form the results of an extended investigation of the behavior of passenger train cars when derailed or in collision and to point out, that, while the steel structure affords much greater safety to passengers than did wooden car bodies, modifications can be made in the superstructures of steel cars which will greatly increase their ability to resist destructive shock.

The data and some of the illustrations from which this paper is compiled can be found in the printed reports of accidents investigated by the Bureau of Safety, Interstate Commerce Commission, which are available to all; other illustrations are from photographs taken by various pictorial news bureaus and have appeared in the daily press, a few are from our office files.

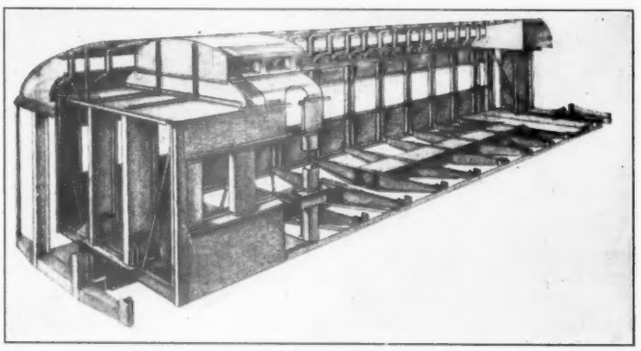
In making our collection many hundred prints were examined and only these were selected which are of interest to car designers. It is greatly to be regretted that frequently the only available photographs of a wreck were taken as general views of the accident. Many valuable photographic studies of structural failures could have been made by an expert on the spot.

It was natural that the early designs of steel car structures should follow conventional lines and that the evolution from the all-wood car to the all-steel car should be gradual. It is now possible, however, to examine the photographic records of typical accidents to passenger trains and profit by past experience when designing and building new equipment.

For the purpose of analysis the illustrations have been divided into two groups: derailments and collisions. The records of the Bureau of Safety show that by far the greater number of accidents are in the derailment class though the loss of life and injury to passengers and equipment is greatest in the collisions.

Derailments

Examining first the large derailment class it is found that a considerable portion of the momentum of the train is gradually expended in plowing up the roadbed and in tossing about the car bodies, therefore the violence of impact between the individual derailed cars is not comparable to the shock experienced in a rear end collision between a moving and a standing train wherein the momentum of the combined units of the moving mass, led by the locomotive, is concentrated in an impact upon the rear units of the standing train. This reduction in the degree of violence of impact is, however, somewhat offset by the fact that when cars are derailed the heavy underframe of one car is frequently projected against the relatively weak superstructure of an adjoining car with more or less disastrous results. Furthermore in derailments the cars are sometimes overturned or fall upon a neighboring car; in such cases the superstructure of the car is subjected to extremely severe stresses.



Framework of Passenger Car

Showing collision diaphragm and bulkhead with high-girder side walls.

Examination of many illustrations of accidents of the derailment and side wiping class, led us to the conclusion that distribution of metal which would strengthen the superstructure of the car as compared to the strength of the underframe was highly desirable. During the last 10 years or more, 315 cars have been built according to a system evolved, with the purpose constantly in mind, to produce a car body

*From a paper presented before the New York Railroad Club, March 18, 1921.

structure of great strength, but still of a weight not in excess of wooden car bodies of similar size and equipment. I wish to introduce at this point a short description of this system which affords unusual protection to the passenger space when cars are derailed or side wiped.

A Car Body Structure of Greater Strength

The sideframe members of these cars are organized in the form of a girder extending from the side sill to the side plate at the roof line, a height of 7 ft. 6 in. or more. The underframe of this system includes centersills adequate to sustain the shocks of collision, draft, etc., but instead of being of the fish belly type, designed to be self-supporting between truck centers, as is the usual custom, the centersills of this system are uniform in section throughout their length and are supported approximately every six feet by heavy cross bearers between the high girder side frames. The centersills, being thus supported, have no measurable deflection and are, therefore, superior in capacity to resist end shock to those of much greater weight and depth which are self-supporting between bolsters. By this co-operation between side frames and centersills a great reduction in weight per car is accomplished and yet a much stronger body structure results.

The ends of the bodies of these cars are reinforced against the stresses of impact to an extent considered appropriate to the service in which the cars are employed, some of these cars being electrically operated in tunnel service, others in suburban steam and suburban electric service, others in through line steam service at high speeds and in heavy trains. The system of end reinforcement is, of course, carried to the greatest extent in the cars in the latter service where the greatest momentum is to be dealt with in case of accident.

This system of reinforcement of the ends of the car body co-ordinates the body end walls with the members of the high girder side frame and roof in the form of a rectangular tube with ends barred to prevent penetration by an impacting body. This is accomplished in the through line cars by the introduction of two new members:

1. An anti-telescoping tie plate extending across the car from side plate to side plate and lengthwise of the car for about six feet forming a flat ceiling for the lavatory, passageway and saloon and being securely riveted to the plate of the high girder side frame.

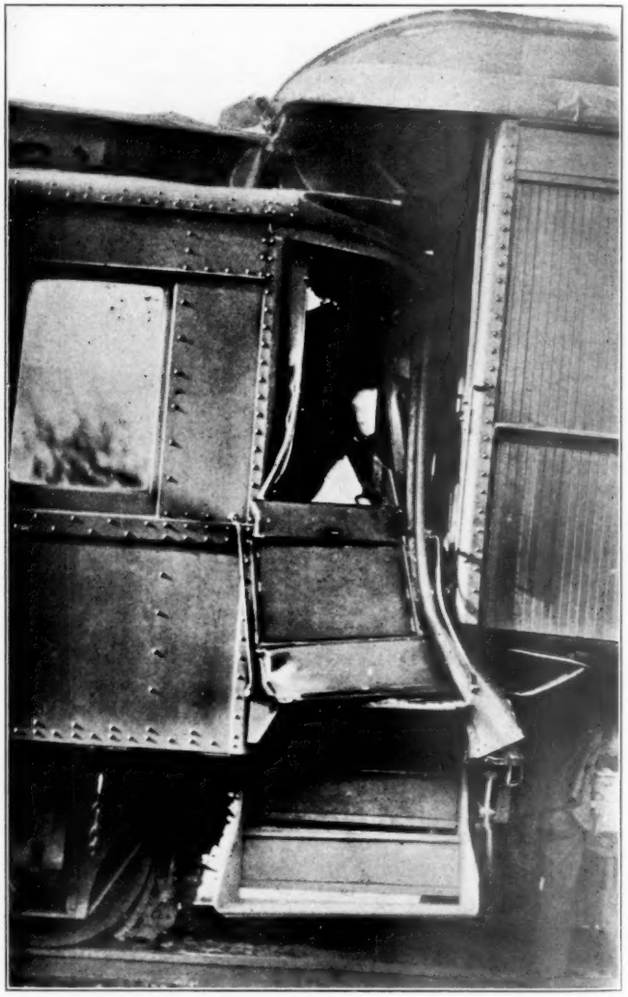
2. Special deep piers forming the posts for the door in the end of the car body. These piers are approximately 21 in. deep and as in some classes of accident they may be subjected to tension, the web plates of these piers pass through the upper tie plate and also through to the underframe and are, together with their flanges, securely riveted to each of these members. The corner posts and the adjacent side posts of the car body are also specially designed to withstand the shock of cornering collision.

The car structure thus formed is illustrated in the perspective drawing shown, from examination of which it will be seen that the compression member of the high girder side frame effectively braces this reinforced body end at the roof line.

The extent to which the high girder side frame and body end reinforcement of passenger car bodies will protect the passenger space when in collision or derailment can be somewhat gaged by examination of the damage to steel baggage cars after being involved in accidents of these classes. Baggage cars, because of the typical arrangement of their side doors, windows, etc., have in effect high side frames, with the elements of plate girders, extending from side sills to roof line at the car body ends. The high girder side frame and body end reinforcement of passenger cars, above described, co-ordinates all the strength elements of the car structure even more effectively than does the form of plate girder side walls of the usual baggage car, and in addition the body of the passenger car will be protected to a certain degree by the wreckage of its vestibule which, when in collision, will be forced back against the reinforced body end. Comparatively little damage results to baggage cars with high side walls when colliding with coaches of the usual low frame construction, thus demonstrating the advantage of the high structure when subjected to end shock.

Rear Collisions

Considering next the illustrations of typical rear collisions, it is interesting to note that, where cars with steel underframes are involved, the penetration by the locomotive into the rear car seldom exceeds the depth of the vestibule and that the greatest damage occurs where one car overrides another. The pilot of the locomotive usually underruns the rear car until



First Stage of Telescoping of Steel Cars

The body of the chair car has overridden the buffer sill of the coach.

the buffer sills of the car come in contact with the heavy frame of the locomotive, where further progress is arrested and the penetration of the vestibule structure by the locomotive boiler or smoke box ceases.

When one car overrides another the penetration is in some instances complete, the entire length of the invaded car being practically destroyed. Careful analysis of typical photographic records of railway wrecks will lead to the following conclusions:

1. The underframe of the modern steel passenger car is adequate to withstand the shock of the most violent collision.

2. The underframe of the invading car overrides the underframe of the invaded car and wedges its side walls apart, the

point of impact being a foot or more above the floor according to the upward angle assumed by the overriding underframe.

3. The superstructures of steel cars fail to protect the passenger space, when overridden in collision by a car having a steel underframe, because of the relative weakness of the invaded superstructure as compared with the heavy underframe of the invading body.

4. The joints connecting the side walls, hood and roof are subjected to tension because the invading body having penetrated between the side walls, exerts a bursting stress on the invaded structure. The members composing the roof are always light in section and the joints connecting them to the

End View of Coach Shown in Previous Illustration

The chair car has commenced to exert a bursting stress upon the body of the coach.

side walls equally inadequate to resist the heavy tension stress of collision.

5. The structure of the invading car is subjected to compression, and as the joints connecting its members are better able to resist compression, than the invaded car structure is to resist tension, the invading car body is seldom seriously damaged.

Accurate computation of the force expended in a collision between trains is practically impossible. Two reactions, however, occur in all rear end collisions, which can be used to roughly gage the violence of the shock, namely:

1. Depth of penetration by the invading car, and
2. The distance the standing train is driven ahead by the force of the collision.

These reactions are complements of each other and roughly indicate the energy expended.

With these reactions in mind it seems highly desirable that the invading car be restrained from penetration by some device which will cushion the impact shock and impart motion to the standing train, thus diverting the force from the work of destruction to the work of moving the mass.

It is obvious that in a train collision the points of impact will be more or less damaged. It is impossible to build a car structure that will successfully resist all damage by an overriding car. The problem is to provide means to arrest the progress of an invading car before it penetrates deep into the invaded structure, meantime transmitting the force of the collision to the standing train to set it in motion.

The essence of this problem is the element of *time*. The structure best adapted to solve the problem must contain members which will act to resist penetration at the vestibule end and interpose a rapidly increasing resistance to the progress of the invading car.

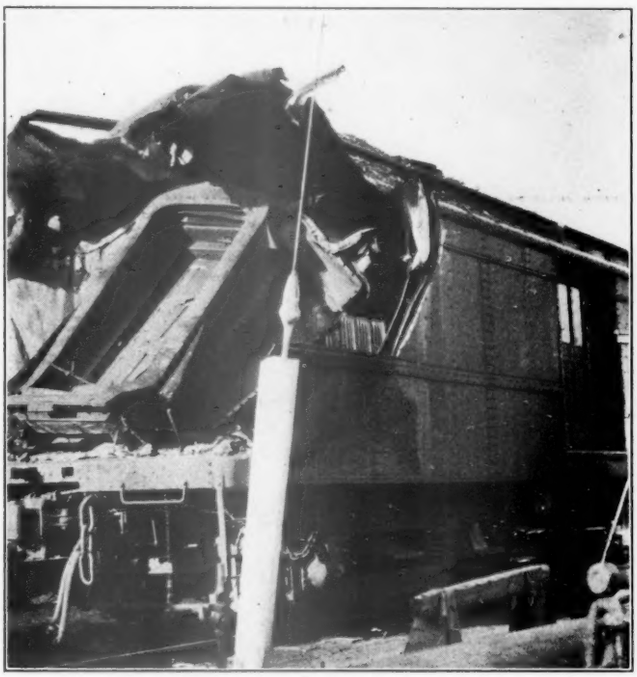
The essential characteristics of a member best suited to accomplish the above ends are: *Flexibility* to avoid shearing; *elasticity* to avoid abrupt stressing; *high ultimate strength* in tension to resist the bursting stress exerted by an invading car.

Use of Wire Cable Proposed as Remedy

Manifestly the material best adapted to meet the above requirements is *wire cable*. The manner of introducing the wire cable in a car structure may vary considerably. One form may be described as follows:

A wire cable anchored to the underframe of the car, passing through the vestibule buffer sill, up through the vestibule corner post, across the hood, down the opposite corner post, through the buffer sill to the anchorage point at the underframe.

The loop is thus distended in such a manner that the vestibule end of an invading car will penetrate within the loop. The initial shock of collision will be met as now by the vestibule end posts. When the resistance of these end posts is overcome and as the invading body progresses, the cable loop, together with the members of the invaded vestibule will be



The Second Stage of Telescoping

When telescoping has reached this stage the structure can offer but little resistance to further penetration by the invading body.

drawn in and down against the vestibule of the invading body crushing both within the confines of the loop.

The more resistant the structures thus crushed, the greater will be the energy absorbed and the greater will be the pull exerted by the cable, through its anchorage in the underframe, to impart motion to the mass.

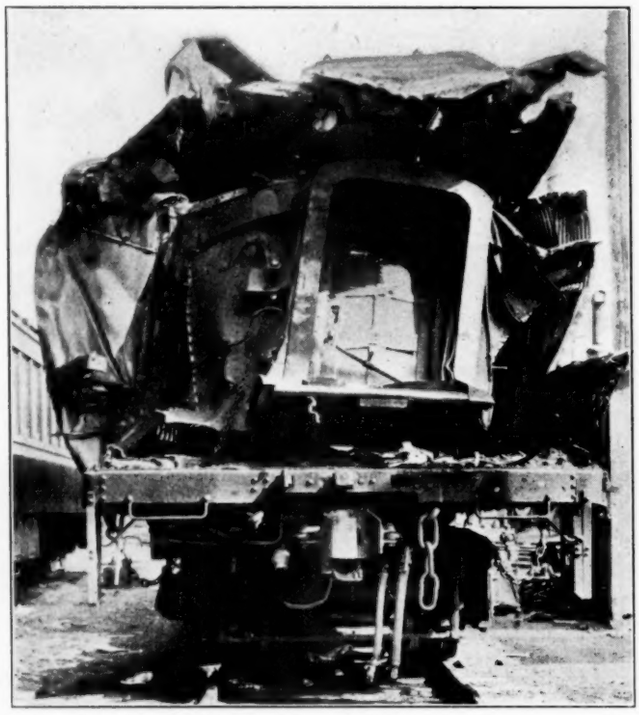
The design further provides for a second group of cables, imbedded in the body corner posts and body end frame, to act as a second line of defence against the invading car. Should the force of the collision be not completely dissipated through the resistance of the vestibule end posts and the cable in the vestibule end, the invading car body will next encounter the

high resistance of the body end wall, and the second group of cables will come into action upon being encountered by the invader. The second group of cables being also anchored to the underframe and distended in loop form will also draw the structure of the invaded car down and in upon the invader and similarly impart motion to the mass. This second group of cables will also act to draw downward and inward the roof and sides of the invader.

The size and number of the cables and the number of groups or lines of defence can be increased until all reasonable doubt of their collective ability to arrest an invading car disappears.

In the absence of the wire cables, a corresponding collision would result in wedging apart the invaded structure with comparatively little dissipation of energy and imparting but little motion to the standing cars, because the energy expended in wedging aside the members of the structure is exerted at almost right angles to the direction of the invading body and consequently, results in but little forward thrust.

The arrangement of the cables is purposely such that it is impossible to bring an abrupt stress on them. They are distended in an approximately rectangular loop by members which, when subjected to collision shock, are bent and distorted by the cable which is of superior strength to any member with which it is associated except only the centersill to which it is anchored. For example the combined tensile strength of the cable loops shown in the illustration is 2,000,000 lb., and therefore equivalent to the ultimate strength of centersills having a cross section of approximately 50 sq. in. Consequently when a car body protected by cables is invaded, the vestibule of the invader will be crushed down and the zone of destruction in the invaded car will be limited to the area enclosed by the cable loops engaged.



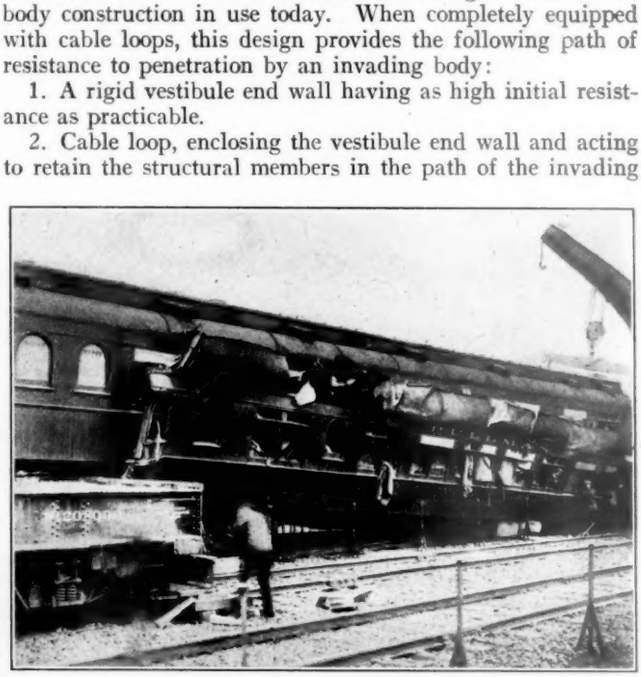
End View of the Car Shown in the Last Illustration

Length of Path of Resistance

Thrust will be imparted to the centersills of the car in which the cables are incorporated, from the moment of impact upon the vestibule end and in a gradually increasing degree until all the cable loops are drawn in and down to a position of rest against the crumpled structure of the invading car. This prolonged and steep path of resistance is of the utmost importance.

In the illustration the cable loops are shown in combination with a high girder side frame and body end reinforcement as first described. This we consider the strongest form of car body construction in use today. When completely equipped with cable loops, this design provides the following path of resistance to penetration by an invading body:

1. A rigid vestibule end wall having as high initial resistance as practicable.
2. Cable loop, enclosing the vestibule end wall and acting to retain the structural members in the path of the invading body, upon the failure of the initial resistance of the vestibule end wall.
3. A rigid body end wall including the strong piers at the doorway and the deep body end reinforcing plate, collectively over five times the section of the vestibule end.
4. The second group of cables which will act to prevent disruption of the body end wall structure and any further penetration.



The Final Stage of Telescoping

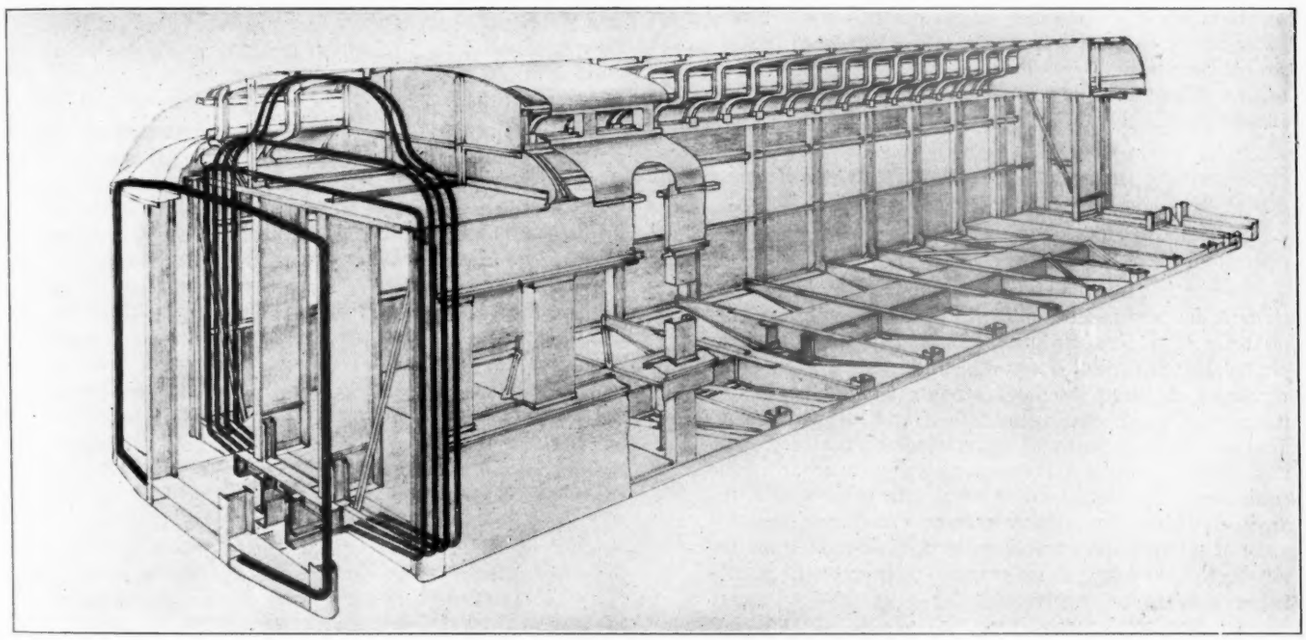
The complete separation of the side walls of the invaded car indicates the desirability of incorporating strong tension members in the superstructure.

The resistance effected by the cable loops is accumulative and the ultimate resistance will not be reached until the wreckage of both vestibules is compressed in a tangled mass within the confines of the loops engaged. The crumpling of the structural members within the cable loops will act to cushion the shock. The resistance will increase rapidly in a series of steps beginning with the resistance afforded by the rigid vestibule end posts and reaching a peak equal to the accumulated resistance of the four stages in the path of resistance above described. The body end structure being of much greater strength than the vestibule end structure will insure that the vestibule structure must be practically destroyed before the initial resistance of the body end structure is overcome, and the second group of cables called upon to resist further penetration. I believe that only in cases of the utmost violence will the body end of the invaded car be crushed in and the ultimate resistance of the main cables be developed. For example in some of the complete telescoping cases illustrated the initial resistance offered by the vestibule and the body end construction of the invaded car was inadequate to prevent penetration. The secondary resistance offered by the roof structure and the interior fittings was negligible as compared to that which would have been afforded by wire cables of 2,000,000 lb. (1000 tons) capacity which would have checked the invader at or near the point of entrance. It is my opinion, that in cases of extreme violence, and before the vestibule structures have been completely compressed, the

thrust transmitted to the underframe of the invaded car, through the medium of the cables, will be sufficient to impart motion to the standing train and thus dissipate a large proportion of the energy of the collision.

We are all familiar with shock absorbers in daily use, such as rubber heels, pneumatic tires, truck springs, buffing devices, draft gear, etc. All these devices introduce a time element, or path of resistance, commencing at the instant of impact and increasing in resistance until the shock is absorbed or the device becomes solid. The introduction of the strong cable loops in the car structure, produces a collision shock absorber which may be compared to a buffing device in which the maximum length of path of resistance, or travel, is only limited to the confines of the loops engaged instead of limited to a few inches travel. Time will not permit of entering into details of the method of incorporating the cable loops in the car structure. It is the intention, however, that all the structural members be retained by the cable loops within the path of the invading body to make resistance to penetration as great as possible.

In the foregoing description of a car adapted to resist the shocks experienced in sidewiping, derailments and collisions we have naturally illustrated and described the design of car which we have ourselves evolved while guided by a close study of the collection of photographic records of accidents which we have been accumulating for a number of years. Manifestly the cable system of reinforcement can be incorporated in any adequate design of vestibule end and body end construction. I, however, believe that a car embodying the strong superstructure, with strong vestibule and body end construction as outlined above is particularly well protected against damage in accidents of the derailment and sidewiping class and further that such a car fitted with the limiting loop of wire cables as described will be as safe against invasion by a telescoping body as now seems possible.



Reinforced Body End with Cable Loops

THE ATLANTA PASSENGER TRAFFIC CLUB, the activities of which were suspended during Government operation of the railroads, was reorganized at a meeting in the Healy building, Atlanta, on Tuesday evening, March 15, with a membership of 144. Joseph P. Billups, general passenger agent of the Atlanta & West Point, was elected president of the club.

Senator Cummins Discusses Railroad Conditions

WASHINGTON, D. C.

SOME OF THE REASONS for the proposed Congressional investigation into the operation of the railroads since they were returned to private operation a year ago are set forth in "The Nation's Business" by Senator Albert B. Cummins. Senator Cummins plans to ask the new Congress to authorize this inquiry.

"Present operating expenses are too high," declares Senator Cummins, "and both Congress and the public are interested in knowing the reason. Giving all the weight which can be given to the diminished traffic, it will not account for the negligible net income which the year will show. Neither will it suffice to say that critical comparison of the railway performance for the year just closing, with the railway performance under Federal control, is exceedingly favorable to private management. That comparison, however satisfactory to those who believe in private ownership under public control, does not solve the problem.

"Obviously the conclusion to be deduced is that it is costing the railroads too much to earn the money which they are earning. This may be due, of course, to mismanagement, or to inefficiency, or it may be due to the excessive cost of material and supplies, or to unreasonable compensation paid to those, from President down, whose labor operates these railroads.

"If the railroads are to survive and render the service which the people of the country must have, the question I have proposed must be answered. It must be answered speedily, wisely and justly. It will be found, I think, that the answer does not lie in the main with additional legislation, but in the prompt and fair administration of existing law. However that may be, the people have a right to know all the facts and make up their own minds after an intelligent consideration of the entire subject. To that end the investigation I have suggested ought to be made, and, so far as I can influence the matter, it will be made."

Senator Cummins points out that "notwithstanding the increase of something like 35 per cent in railroad rates, which became effective about the first of last September, the rail-

roads, as a whole, show a very small net operating income, while many of them have not earned the cost of maintenance and operation.

"There seems to be a widespread misapprehension with regard to the causes for this lamentable result; or, if not misapprehension, at least a failure to understand a situation which threatens the solvency of many of the best railways of the country. I find among those who have given some study to the prevailing conditions radical differences of opinion, both as to the cause and the remedy. This conflict of opinion arises, in my judgment, from a misunderstanding of the facts which have transpired in the last year, and it seems to me that there ought to be an immediate inquiry, attended with the utmost publicity, into the operation and management of the railroads since they were returned to their owners. With this in view, I intend at the opening of the next session of Congress to submit to the Senate a resolution proposing the broadest sort of investigation into the subject. The people want to know just what has happened during the past year; why existing railroad rates have not accomplished the purpose of the act which returned the roads to their owners, and especially why the cost of maintenance and operation has not been reduced.

"It is obvious that rates should not be increased, if for no other reason than that another general advance in rates would probably diminish rather than enlarge the net railway income. There are, therefore, but two ways in which the net income can be advanced:

"First, by an increase in the volume of traffic without a corresponding increase in the cost of maintenance and operation.

"Second, by a reduction in the cost of maintenance and operation.

"In considering the statistics which I am about to present, it must be remembered that they do not embrace and have no reference to expenditures for construction or equipment chargeable to capital account. Under the system of railway reporting required by the Interstate Commerce Commission the net railway operating income of any given railroad is the amount which remains after payment of the cost of maintenance, operation and taxes, with the proper adjustment of equipment and joint facility rents. In other words, it is the amount which the railway company may use for the payment of interest upon its obligations, dividends, upon its capital stock, for adding to its surplus, or investment in any lawful way as capital is invested.

"It is generally believed that during the latter part of the year 1920 the volume of traffic was materially less than for corresponding periods in former years, and, if this be true, it would tend to explain the decrease in net operating income, for the cost of maintenance and operation does not diminish in the exact proportion of a lessening traffic.

"The aggregate net ton-miles carried from March 1, 1920, to December 31, 1920, was 381,482,259,000. For the same period in 1919 the aggregate was 340,425,083,000. The number of passenger-miles during the same time in 1920 was 39,959,099,000, while for 1919 it was 39,528,264,000. Measured by this standard the volume of traffic upon all the railroads of the country was greater in 1920 than in 1919. In round numbers, figures for the entire year 1918 are 360,000,000,000 and for 1917, 350,000,000,000, with passenger-miles for those two years 35,000,000,000 and 34,000,000,000, respectively.

"Toward the latter part of the year and continuing up to this time, there was, and still is, a remarkable decrease in the number of cars of revenue freight loaded. The (ton-mile) reports for January of this year are not compiled, and the reports for February have not been made, but I have advance information upon one point, namely, the number of cars of revenue freight loaded. The following table discloses that information and the comparison with 1920.

	Cars of Revenue Freight Loaded.	
	1920	1921
January 1	745,446	598,905
January 8	830,673	706,413
January 15	840,524	709,888
January 22	804,866	703,115
January 29	803,332	699,936
February 5	762,680	696,997
February 12	786,633	681,627
February 19	772,102	695,506

"Another indication of a condition which began in November, 1920, and which has progressed steadily up to the present time, is a surplus of freight cars; that is to say, the number of cars for which there is no present use. On December 21, 1920, the number of such cars was 204,608. The number rose during January, 1921, and at the close of that month was 324,186, and the last report, on February 14, 1921, the number was 290,550.

"These statistics very clearly show that while the volume of traffic for the last 10 months of 1920, taken as a whole, was greater than during the same period in 1919, or indeed at any former similar period, yet beginning as early as November and proceeding rapidly to the present moment, there has been a tremendous diminution in traffic. These statistics accord with our observation with respect to the decline in business during the latter part of 1920 and the early part of 1921.

"I direct attention now to the operating revenues and operating expenses from March 1, 1920, to December 31, 1920. The operating revenues of all class roads amounted to $5,299,654,454. Operating expenses, including taxes and the adjustment of equipment and joint facility rents, amounted to $5,289,348,937, leaving a net operating income for these 10 months of $10,305,517, and if we assume that the remaining two months of the year, from March 1, 1920, to March 1, 1921, show no better results, then for the whole period the net operating income will amount to no more than one-fifteenth of 1 per cent of the value of the railroads as estimated by the Interstate Commerce Commission.

"It is interesting and instructive to know that the net operating income for March, 1920, was $14,320,571. In April there was a net deficit of $29,604,417, in May of $13,455,871, in June of $16,284,900, in July of $10,427,989 and in August of $155,227,617. The great deficit of August is probably accounted for by the back compensation ordered paid to the employees by the Railroad Labor Board in July, 1920.

"In September, that being the first month under the increased rates which were established by the Interstate Commerce Commission, there was a net operating income of $75,310,311, in October a net operating income of $86,455,487, in November of $54,343,793, and in December of $10,225,583. The decreasing net income in November and December seems coincident with the decreasing volume of traffic which began in November and which is still in progress.

"It may be helpful to institute a comparison here and there. For January, 1915, considering only Class I roads, railway operating expenses were $163,654,452. In December, 1915, these expenses were $184,510,067; in January, 1916, $183,702,959, and in December of that year, $209,615,966; in January, 1917, $215,496,356, and in December of that year $251,302,146; in January, 1918, $271,521,592, and in December of that year $396,468,865; in January, 1919, $360,465,815, and in December of that year $414,615,756.

"The expenses I have just given do not include taxes or the adjustment of equipment and joint facility rents. In March, 1920, these expenses had arisen to $421,713,184, in July to $511,773,300, in August to $678,728,682, and in December, 1920, they had fallen to $523,206,889."

Present Wages and Rules Ruining Canadian Railways

Reflex of "McAdoo Award" and Other Changes in United States Disastrous in Dominion—Chairman of Railway Commission Speaks Out Frankly

By J. L. Payne
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THE PEOPLE OF CANADA are awakening to the importance of the railway issue. After years of indifference on the part of the vast majority, and a settled attitude of hostility to all corporate interests on the part of a small but articulate minority, the truth is being generally accepted that a vital relationship exists between transportation and the life-giving commerce of the country. If the service which the railways are providing is crippled, a steadily swelling number of reading and thinking men are realizing that the whole community must suffer too, and suffer directly and acutely. If the railways should break down there would be universal stagnation. The actual conditions today suggest that as a possibility.

There has never been a time when all the leading newspapers were giving up so much space to carefully digested articles on the railway situation. Heretofore, references to transportation problems were incidental and spasmodic. They were not always based on accurate information. Today such references are frequent, and represent studious attention to fundamental conditions. Slowly, but nevertheless surely, the truth is being accepted that (1) the railways are in very grave trouble, (2) that this trouble has its foundation in the rising ratio of operating cost to gross earnings, (3) that higher operating cost is due in large measure to the scale of pay to railway employees, (4) that that scale is unreasonably high, and (5) that wages might be reduced to the rates paid to other skilled and unskilled workers without injustice to railway men.

Here, for example, is a paragraph from an editorial in the Ottawa Journal, one of the prominent newspapers of the Dominion, of March 17:

"The Chairman of the Railway Commission finds the salient cause of high operating cost to be the present scale and conditions of pay to employees, in which respect he gives direct corroboration to the judgment of the Deputy Minister of Railways. He declares the scale to be unreasonable, and backs up his statement by an array of facts showing that men in the railway service are receiving wages far above those paid to other workers. In support of Mr. Carvell's contention, here are a few specimen payments for a recent month by one of our leading Canadian roads:—Train conductor, $434.23; locomotive engineer, $425.33; telegraph operator, $268.64; station agent and operator, $254.34; yardman, $237.84; train dispatcher, $257; blacksmith, $227.69; coach painter, $208.12; machinist, $220.71. These sums are purely typical of many, and were earned under a scale which Mr. Carvell refers to as 'ingenious.' He said: 'The straight pay looks reasonable and moderate, but the 'conditions' enable an employee to get time and a half while loafing.'"

Among the influences which have contributed to public enlightenment on this important subject have been the recent public addresses of Hon. F. B. Carvell, chairman of the Dominion Board of Railway Commissioners. It is unusual for one occupying such a high position to speak at all in public on matters associated with his judicial functions. All British traditions are more or less against it. That intense conservatism which clings to judges under the British system has made for reserve. For that very reason, therefore, everybody in Canada understands that only the most extraordinary circumstances, only the utmost gravity of the case, could justify the chairman of a lofty tribunal like the Railway Commission in breaking the traditional bonds which hold him in large degree to silence off the bench.

Hon. Mr. Carvell has not only broken away from the reserve which has characterized him thus far, as well as that of his predecessors, but he has spoken with the utmost frankness on at least two occasions. The first was at Montreal on January 30 last, when he addressed the Canadian Railway Club. In that address, he referred in forceful language to the great part which the railways had played in developing the Dominion, especially the vast prairie provinces of the west. To the agreeable surprise of his audience he stepped aside from the beaten path usually followed on such occasions, when pleasant generalities are uttered rather than anything of real public interest, and "spoke his mind," as men would say. He said:

"During the past two years I have had much reason to change my ideas regarding our railways. Without the railways Canada cannot progress. These railways must go on no matter what happens."

Commission Chairman Denounces "McAdoo Award"

With that start off the common road of men in places of responsibility, he plunged into the question of rates. In that relation he said:

"Whether a railway is owned by a corporation or by government I consider that it should be granted rates sufficient to allow it, if efficiently and honestly administered, to pay maintenance, interest on investment, and something besides that. Whether it is a government or privately owned road the rates should be sufficient to meet cost of administration and pay interest on investment; and so long as I occupy my present position I shall hold to that idea as my guiding principle in dealing with all questions as to rates.

"Wages is a matter which does not particularly concern the Commission, but when the present rates expire a year and a half hence the public and the employees must realize that an adjustment will be necessary.

"I am not discussing wages but a bigger question, that of the service employees are giving their employers on the railways. It has been stated that the Canadian people are receiving the cheapest railway service in the world, but if we are paying too much for that service there is cause for complaint. I believe that in some classes of railway work we have not been getting the returns we should for the wages paid."

He made an appeal to the employees on government lines to give as efficient and loyal service as, for example, the employees of the Canadian Pacific gave to that road; and in this there was a clear implication of something wrong along that line. Naturally these observations, terse and broad as they were, were given considerable publicity, and Mr. Carvell seems to have thought it necessary to be more specific. Hence, when he spoke to the Rotary Club of Ottawa on March 14 he threw all reserve to the winds. He said:

"Canada cannot continue with the railway situation as it

is. There must be an early conference of representatives of industry, business, the railways, labor and the government to discuss developments and bring about a change. If business keeps dropping off as it has during the past two months, I am afraid that the Canadian Pacific will not be able to pay dividends this year. It would be a calamity if that took place, because the Canadian Pacific has been one of the bulwarks of Canada and has grown to be an institution of the country.

"There is need for a new relation between labor and capital. The thought has been inculcated in the minds of laboring men that they are not to give service for money received. The working man has been advised to give the least that is in him. I do not want to see wages go back to the scale of 1914, but I want a man to give value for pay received. I believe a plan can be worked out to get railways back to normal.

"Railway employees are good citizens, and I consider that they are the aristocrats of the labor world in Canada. They are not crooks and should not be blamed for the cause of present conditions. The McAdoo award is more directly responsible. That award was not based on good judgment, on railway economics, nor on good business principles. It was merely offered and adopted as a vote catcher.

"The McAdoo award is one of the most iniquitous pieces of legislation ever foisted on the United States.

High Labor Costs Cause High Rates

"Proof that it was not a proper measure is found in the fact that it was followed by many amendments, adjustments and changes. It affected the Canadian railway situation because the railway employees of Canada threatened a general strike unless they benefited to the same extent as did railway men in the United States. The first McAdoo award meant an increase in wages to the extent of $8,000,000 for employees of the Canadian National Railways alone, and this was followed by another increase amounting to $13,000,000. Last July wages to railway employees in Canada were increased about $50,000,000, the Canadian Pacific being called upon to pay $21,000,000 more. The fact that the increases were made retroactive to May, 1920, meant a difference of $20,000,000 in back pay which was not earned.

"That is the reason you are paying higher freight rates."

Hon. Mr. Carvell gave a few instances of high earnings by railway employees. Among them were payments of upwards of $120 per week to conductors, and one extraordinary instance of a woman station agent who drew down $202 every two weeks. This arose from a strict legal interpretation of the classification and regulations attaching thereto, under which the woman was paid an enormous allowance for overtime. How she spent the overtime does not appear to have been a factor. She was technically on duty, and, as the post was occupied by a woman, it is obvious that it was of minor importance. Probably her wages exceeded the total receipts of the station.

I had a talk with Mr. Carvell and asked him if he cared to add anything for the *Railway Age* to what he had said either at Montreal or at Ottawa, and his answer was in the negative. His reasons were good. "I have already exposed myself," he said "to criticism for having spoken at all. My motive may be misunderstood by many; but I have been so deeply impressed by the importance of the railway situation as it has developed during recent years, and the apparent apathy of the public, that I took the risk of departing from what might be regarded as a strictly proper attitude on the part of one in my position to sound a note of warning. I have gone as far as I could, and perhaps further than some will be disposed to approve. I regard the railway problem, however, as it exists today as the most serious thing which has happened in the whole history of the Dominion, and I simply could not be silent."

Losses of Government Railways

The allusion of Hon. Mr. Carvell to the serious results on the Canadian National system brought about by the McAdoo award is corroborated by an important report just made by Major Graham A. Bell, Deputy Minister of Railways. He deals elaborately with the facts of the case, and most convincingly, too. It is the first report of that nature ever published by the department, and emphasizes the serious view that is taken in official circles of the present scale of wages in its relation to the whole problem of rising operating cost. After announcing a deficit for the year ended December 31, 1919, of upward of $50,000,000, including a considerable volume of fixed charges, he says:

"The great single factor contributing to the exceptional increase in expenditure during the year, and in fact during the past several years, has been the heavy increase in the wages of railway workers without commensurate increase in the rates or volume of business. These increases for the Canadian National are shown in the following table of wages paid:

1917-18	$40,606,170
1918-19	57,252,095
1919-20	73,567,036

"Out of every dollar earned in 1917-18, 59 cents were paid in wages. In 1918-19 the proportion was 67 cents, and in 1919-20 it had grown to 76 cents."

In continuing Major Bell points out that during the past year $16,314,941 was absorbed by wages out of an increase of $20,220,432 in operating expenses, or 80 per cent. The increases in wages during the past three years was 82.29 per cent of the increase in operating cost and 125 per cent of the increase in operating revenue. Bearing in mind the relationship of wages to this matter, the situation on the government system is further accentuated by the fact that operating expenses increased on the Canadian Northern unit from $4,662 in 1918-19 per mile of line to $6,230 in 1919-20. Per train mile for the same road the advance was from $1.98 in 1917-18 to $3.36 in 1919-20. Railway operators need not be told of the frightful significance of these figures, and they are due almost wholly to the McAdoo award and the succeeding increases.

D. B. Hanna, president of the Canadian National Railways, puts the case even more directly in a report incorporated with that of the Deputy Minister. He says, in alluding to the Canadian Northern unit:

"The increase of $15,971,074 in operating expenses is nearly all due to higher wages. The general large increases in rates of pay granted during 1918 under the McAdoo series of advances, which were reflected only in part in the operating expenses for the year ended December 31, 1918, show their full effect in this year's figures, and the total is increased by the effect of additional supplements issued during 1919 by the United States Railroad Administration and which, under arrangement between the Canadian Railway War Board and the Dominion government, have been applied to the wages of railway employees in Canada.

"Under these conditions, and with less than one per cent increase in train service, the net result for the past two years has been to convert net earnings of $789.08 per mile of line in 1917, and $343.53 in 1918, to a deficit of $671.63 per mile for the year ended December 31, 1919."

It is characteristic of President Hanna that he is not overwhelmed by his own picture of disaster, but ends his report with a fine show of optimism. He is sure all these obstacles to satisfactory progress will be removed, that the sun will shine again, and that all will go smoothly toward a day of ultimate triumph. This is somewhat exceptional for a Scotchman; but Mr. Hanna claims to have seen worse days.

What of the people? Upon them falls this heavy burden of deposit; for the Dominion treasury must pay it. It would

be hard to say at this moment what is the state of public feeling. A few warning voices were heard in Parliament and in the press during recent years, but they did not appear to touch the public conscience; and, of course, during the progress of the war everything was pushed aside for the supreme issue. Now, as was said at the outset, there are signs of an aroused interest in the troubles of the railways, and people are commencing definitely to realize that those troubles are also theirs. With over 52 per cent of all railway mileage in the Dominion owned and operated by government, they see, or are commencing to see, that a very large proportion of the railway losses must be paid out of their pockets. This irritating fact has at the same time brought them into contact with the international jurisdiction of the railway brotherhoods, and with the further startling fact that when General Director McAdoo was fastening a ruinous scale of wages on American railways he was automatically fastening that same scale on Canadian roads.

If Hon. Mr. Carvell has in mind a government commission, composed of representatives of the classes he specifies, he may find that the people have lost the robust confidence which they at one time reposed in the dignity and usefulness of such inquisitorial boards. It has almost come to be an axiom in Canada that if you want to smother any matter as to which inquiry has been provoked, all you have to do is to get it referred to a royal commission. There must be in the public archives a fine collection of still-born reports from such august bodies—and excellent reports some of them were. But if the people should become really aroused, that would be an entirely different matter. And that is precisely what is likely to happen. Those who have pushed up railway wages did not have to contend against public opinion, and if public opinion decides that wages are unreasonably high they will come down. That looks like the one thing that would start the railways back to solvency and safety. But it will be a momentous struggle.

Getting the Maximum Service Out of Old Bridges*

Systematic Classification of Structures Insures Accurate Capacity Rating in Shortest Time

By C. F. Loweth
Chief Engineer, Chicago, Milwaukee & St. Paul, Chicago

THE TERM CLASSIFICATION of bridge, is here used to describe the systematic investigation of old bridges with a view of determining the maximum loads which they can safely carry. In order to conduct a systematic investigation of the carrying capacity of bridges, it is necessary to adopt a standard measure. Most any assumed train load might be used for this purpose, but on account of the universal use of Cooper's class E loading, the Chicago, Milwaukee & St. Paul has adopted this loading as the standard unit of comparison.

In order to obtain direct comparison between the structure and the power to be operated, it is, of course, also necessary to obtain the effect of the various locomotives and train loadings in actual use, on the various members and details of each structure in terms of the same standard as that used for rating the bridges.

The present practice on the Chicago, Milwaukee & St. Paul is to make an investigation or "classification" of all bridges subject to loadings much in excess of those for which they were designed. The carrying capacity is determined in terms of the standard series of train loadings. New engine and car loadings that come up for consideration are classified in that same series of standard loadings, and it is then a matter of direct comparison to tell whether or not such proposed loadings can be handled safely over the various bridges.

Unit Stresses

The classification is based upon maximum unit stresses which are considered proper for the various materials as used in the structures under consideration; these unit stresses are nearer the limit of useful strength of the material than in those used in designs. The maximum unit stresses permissible in old structures cannot be arbitrarily determined for universal application. There is perhaps no greater responsibility placed on a bridge engineer than in determining the safe rating of an old bridge; the work involves far more than the mere calculation of stresses and the arbitrary assumption of safe unit stresses. In order to decide intelligently upon the limiting unit stresses, the following should be given full and careful consideration:

The design—whether the details are well proportioned and direct in action, the degree of ambiguity or uncertainty as to distribution of stresses and of secondary stresses.

The character of workmanship and material entering into the structure as indicated by the reputation of the shop at which the bridge was built and the thoroughness of the inspection as disclosed by inspection reports of material and shop manufacture.

Deterioration and wear.

Action under load, such as rigidity and freedom from excessive vibration.

The speeds likely to obtain over the structure and confidence as to the observance of such speed restrictions as may be imposed.

The certainity as to the assumed loading being the maximum to which the bridge will be subjected.

Importance of the traffic and the hardship which might result from temporary disablement of the structure.

The reliability of the data upon which the investigation of the structure is based.

In general the exercise of good judgment and experience based upon all of the factors surrounding the bridge, its location, service and condition.

Coming now to unit stresses: Axial stresses in tension per square inch may generally be taken as follows:

	Wrought iron	Steel
In flanges, beams and girders	20,000 lb.	24,000 lb.
In truss members	18,000 lb.	22,000 lb.

Stresses of other kinds should generally be proportional to these, the same as in the design of new structures.

To the designer of new structures these unit stresses seem large; in the case of old bridges they frequently seem small, especially in the case of the structure subject within regular service to stresses of such intensity and at the same time indicating little or no evidence of distress.

There may be at times conditions which may require, and at the same time justify increasing the limiting axial tension stresses to a maximum of 22,000 lb. for wrought iron and 26,000 for steel. It does not seem wise, however, to permit these higher stresses except in the case of structures which

*Abstracted from a paper and discussion presented before the Western Society of Engineers at Chicago on March 17.

are to be removed or strengthened at an early date, or where the traffic over them is relatively unimportant. It sometimes happens that a bridge must be kept in service longer than would otherwise be necessary because of pending improvements, such as double tracking, revision of grades or alinement, etc., which delay its replacement. The higher unit stresses may be necessary to meet emergencies of this or other nature.

It is desired to call attention again to the fact that the stresses mentioned are not to be applied indiscriminately. There may be cases where the limiting stresses should be less than those mentioned, and the writer has had cases in his own practice where the stresses have been even higher. It is obvious that the higher the stresses, the more care and discrimination necessary for intelligent and safe application. It must not be overlooked that increasing the loading with consequent increase in unit stresses will materially increase the vibration of the structure and the wear and tear on the details of connections, will lower the margin of safety, will materially shorten the useful life of the structure, and will render it more liable to injury.

There are some details of construction in which it appears that the limiting stresses might safely be increased at a larger ratio over the axial stresses heretofore indicated.

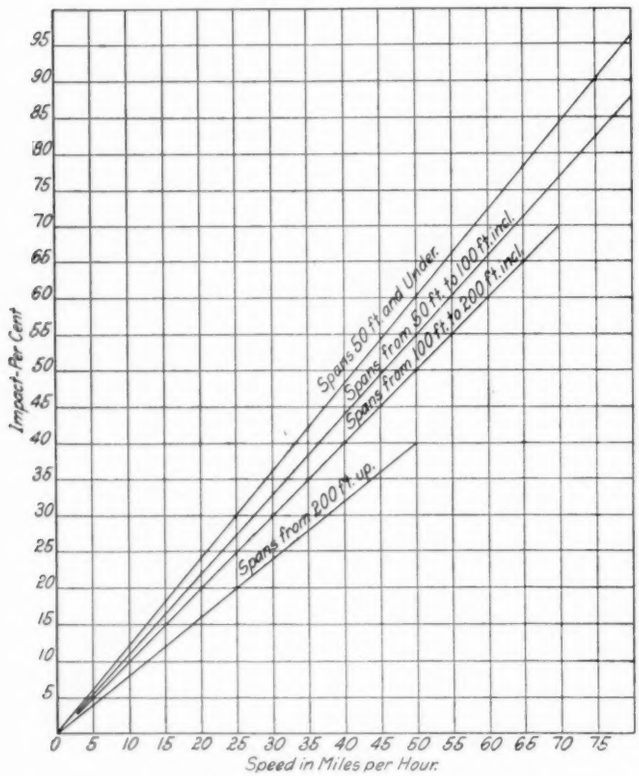

Impact-Per Cent
Speed in Miles per Hour
Spans 50 ft and Under.
Spans from 50 ft. to 100 ft. incl.
Spans from 100 ft. to 200 ft. incl.
Spans from 200 ft. up.

Fig. 1—Percentage of Impact for Various Speeds and Span Lengths

This, for instance, is true of stresses on the flange rivets in plate girders, stringers and floor beams. The failure of a girder in the flange riveting could not take place before ample warning of distress would be evident in the way of loose rivets, in this case the riveting could be strengthened before further failure could occur. It is, however, very seldom that flange rivets shows signs of overstress, in fact. I am unable to recall a single instance where our bridge inspectors have reported loose flange rivets. I see no reason, however, for changing the general practice in designing new girders on this account.

Impact

The impact for designing new bridges is taken as the maximum obtainable at unrestricted and very often at a very high speed, not usually obtained under ordinary conditions. In rating old bridges as to their maximum capacity, the impact allowance should be based on the probable maximum speed obtained. The speed is frequently known, and it can be restricted arbitrarily or it may be restricted due to the conditions surrounding the location of the bridges or the character of the traffic. It is desirable, therefore, for the purpose of rating old bridges, to determine not the impact for maximum speeds, but for such restricted speeds as the

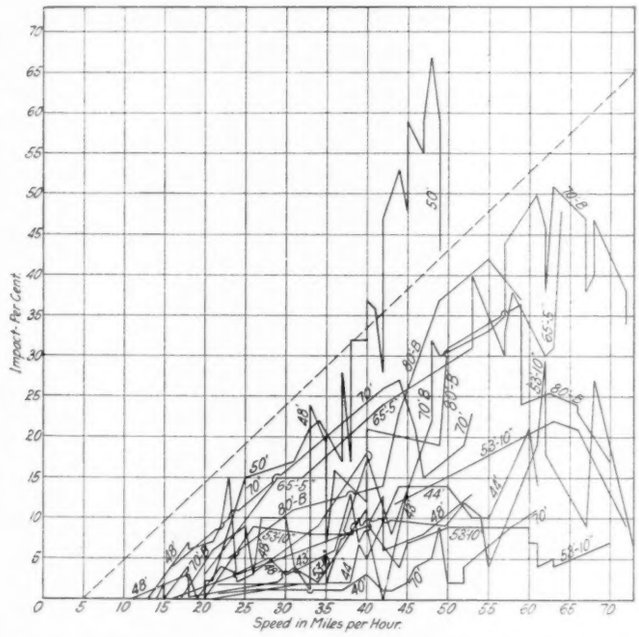


Fig. 2—Composite Chart of the Results of Impact Tests on Deck Plate Girders

structure may be subject to, either by reason of arbitrary ruling or speed limitations brought about by the location of the structure as to proximity of stations, ruling gradients, etc.

The impact per cent for various speeds and for spans of different lengths are shown in Fig. 1. This compact diagram has been evolved from several diagrams upon which have been platted the results of the impact tests made by the A. R. E. A., classified as to speed of train and length of structures. One of these diagrams, Fig. 2, shows the impact observed for various speeds on deck plate girders from 43 to 80 ft. in length. This diagram includes a total of 14 spans, all of which have open timber floors except three.

These diagrams indicate that for all practical purposes the impact is directly proportional to the speed. The similar diagrams for truss spans show a similar condition, and on the basis of this practical information, the curves in Fig. 1 were drawn to cover the probable maximum impact for various speeds and different span lengths represented by the curves.

General Methods

In general, the investigation for any part of a bridge would be as follows:

1. The maximum allowable stress is determined which, in the simpler cases, is the cross sectional area of the member times the limiting unit stress allowed.
2. Deduct from this the stress due to "dead load" and

"wind load." The remainder gives the allowable stress for the "live load" effect.

3. Divide this by the stress for unit "live load" (Class E-1), which gives the classification for allowed "live load," if at rest.

4. Divide this classification by the term which takes into account the extra effect of the "live load," due to impact and centrifugal force, the result being the classification of the allowed "live load" at full speed.

As an illustration of this general method, the example of the hip vertical member known as Ul-Ll of a truss. Assume that this consists of two steel bars, 4 in. wide by 1 in. thick, giving 8 sq. in. of cross section. If we assume that in this case the circumstances warrant the limiting unit stress of 24,000 lb. per sq. in., the total allowed stress is 192,000 lb. Assume that the dead load stress is 17,000 lb. and that the wind load is so small that it may be neglected. The total allowed stress available for live load is then 192,000 lb. — 17,000 lb. = 175,000 lb. The live load stress in the member for Class "E1" loading as determined by the usual methods of computing stresses in bridges, is 1,890 lb. The total allowed live load classification, if at rest, is therefore, $\frac{175{,}000}{1890}$ = E 92.1. Impact if taken by the ordinary formula $\frac{300}{300 + L} = \frac{300}{300 + 50}$ = 0.865 of the live load. Considering the bridge on straight track, the centrifugal force stress is zero. Therefore, if LL represents the net live load at full speed

$$LL + 0.856\ LL = E\ 92.1$$

$$LL = \frac{E\ 92.1}{1.865} = E\ 52.2$$

which represents the "Classification" of the member at the assumed unit stress. That is: An engine with wheels spaced as in the Cooper loading having 55,200 lb. on the driving axles and the other axle loads in proportion, will produce the assumed stress of 24,000 lb. per sq. in. if taken in connection with the other forces which are assumed to be acting.

Classification of Loadings

It is surprising to observe the extent to which it is generally assumed that the effect of various train loadings on

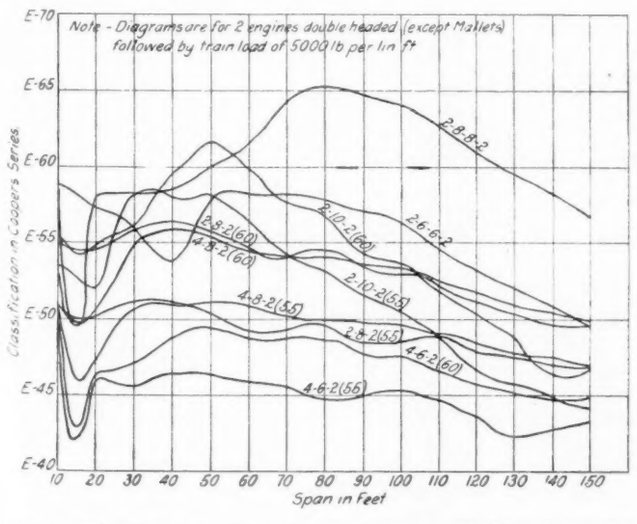


Fig. 3—Diagram Showing the Comparative Bridge Stressing Effect of 10 U. S. R. A. Standard Locomotives on the Basis of Bending Moments

bridges is in direct proportion to the aggregate weight of the locomotives and cars. This, of course, is far from the truth and no approximation by such a method should be used to determine the safety of any bridge.

The Fig. 3 shows the classification of several types of United States Railroad Administration standard locomotives for various span lengths compared with the standard Cooper's Class E loading. The diagram shows for each of the locomotives the relation between the effect of the given engines on bridges as compared with the standard Cooper's loadings, which are used as a basis for the classification of bridges. The locomotives classified in Fig. 3 are listed in the following table:

LOADING CHARACTERISTICS OF SOME U. S. R. A. LOCOMOTIVES

	Weight			Wheel Base		
Type	On Driver Axle	Total Engine	Engine and Tender	Driving	Engine	Engine and Tender
Pacific (4-6-2)	55,000	270,000	414,000	13′ 0″	34′ 9″	67′ 6½″
Pacific	60,000	300,000	444,000	14′ 0″	36′ 2″	70′ 8½″
Mountain (4-8-2)	55,000	320,000	492,000	18′ 3″	40′ 0″	75′ 8½″
Mountain	60,000	350,000	522,000	18′ 3″	40′ 0″	75′ 8½″
Mikado (2-8-2)	55,000	290,000	466,000	16′ 9″	36′ 1″	71′ 5½″
Mikado	60,000	325,000	497,000	16′ 9″	36′ 1″	71′ 9½″
Santa Fe (2-10-2)	55,000	360,000	532,000	21′ 0″	40′ 4″	76′ 0½″
Santa Fe	60,000	390,000	596,000	22′ 4″	42′ 2″	82′ 10½″
Mallet (2-6-6-2)	60,000	440,000	646,000	10′ 4″	50′ 2″	88′ 10″
Mallet (2-8-8-2)	60,000	540,000	746,000	15′ 5″	57′ 4″	93′ 3″

Points of Low Classification

In old structures, it is generally found that the floor systems are comparatively lighter than the girders in plate girder bridges and chord members of truss bridges. The point of low classification in stringer, floor beam and plate girder flanges is generally found at the point of maximum moment, except that where cover plates are used the low classification in the flanges may be found at a point where a cover plate terminates. The flange riveting near the ends of these members very often falls below that required by modern practice. The webs at the point of maximum shear and web splices near the ends of plate girders and the connection of floor beams to the gusset plates, frequently requires strengthening in order to produce a structure of uniform strength.

Members of low classification in truss bridges may be looked for in posts and diagonals near the center. The hip verticals very often are out of proportion to other members of the bridge. The end posts and top chords generally show up poorly on account of eccentricity with respect to pins. If the pins of a truss bridge should be calculated according to the accepted practice for designing truss pins, these pins would, almost without exception, show an extremely low rating.

In addition to the weak points in the design, the top flanges of stringers, deck girders and floor beams very often suffer from corrosion due to brine dripping and in bridges where the ties are supported on shelves, the shelf angles frequently are considerably weakened from corrosion. Overhead bridges are subject to excessive corrosion, due to smoke and gases, and this condition is further aggravated where these structures are covered with a solid floor, which prevents the smoke and gases from escaping, and also prevents the steel from drying out quickly; in cases of scant clearance, metal bridges may show excessive deterioration from the sand-blasting effects of cinders. This is especially the case where overhead bridges are located on an ascending gradient.

The Economics of Reinforcing

With the maintenance of old bridges, the question arises whether it is more economical to strengthen the structure than to renew it. This to a great extent depends on whether the old structure can be used to advantage on a branch line or is relegated to the scrap pile. On most large railroads there are branch lines carrying lighter traffic and requiring much lighter locomotives than on main lines; this condition makes it possible to remove bridges too light for main lines and use them on branch lines. Frequently the bridge will be quite suitable for branch line service without strengthening, although it will at times be found desirable to strengthen the bridge before it is re-erected in its new location, when this can be done more economically than while in service. Bridges which are too light for branch line service or which

for other reasons cannot be so disposed of, can frequently be used in highway overhead structures.

As a general proposition, the yearly amount of money that it would be permissible to spend for strengthening would be equal to the interest on the investment in a new bridge less the cost of additional maintenance required by the old bridge on account of the greater attention it receives.

For illustration, consider a few lengths of through spans designed for E-55 loading, replacing similar spans designed in the early nineties, the new steel work being taken at 5 cents per pound erected, falsework at $10 per lineal foot, removal of the old structure at $10 per ton, salvage on old span at 2½ cents per pound, additional cost of maintenance of the old span on account of additional inspection, classification and supervision required, $1 per foot of span per year. The last column of the following table shows the amount which we could afford to spend per year in strengthening old spans rather than to renew them. The costs shown in this table are for illustration only. As they fluctuate from time to time, the resulting economies will vary accordingly.

RELATIVE ECONOMY OF REPLACEMENT AND STRENGTHENING

Span	New Steel: Weight Pounds	New Steel: Cost Erected	Salvage	Net Cost	Interest on Net Cost at 5 per cent	Available for strengthening each year
50 ft. ...	60,000	$4,330	$1,130	$3,200	$160.00	$110.00
100 ft. ...	218,000	13,390	3,700	9,600	480.00	380.00
200 ft. ...	800,000	46,800	12,500	34,300	1,715.00	1,515.00
300 ft. ...	1,600,000	92,200	25,000	67,200	3,360.00	3,060.00

With old and light bridges a limit is reached beyond which it is not economical to strengthen them, and replacement then becomes necessary. It must be recognized, of course, that a newly designed and heavy structure is preferable to a lighter one. It is possibly true that in case of a train accident on a bridge, a lighter structure might be destroyed while a heavy new structure might withstand the same treatment without being seriously disabled. Such considerations must be taken into account in shaping the general policy of keeping lighter bridges in service. Acknowledgment is made of valuable assistance in the preparation of this paper to H. J. Hansen, office engineer, Chicago, Milwaukee & St. Paul.

Discussion

O. E. Selby (C., C., C. & St. L.) said that the views expressed by Mr. Loweth in his paper indicated that the latter was much nearer in accord with the views of the committee on iron and steel structures of the American Railway Engineering Association than was presumed to be the case from Mr. Loweth's discussion before the A. R. E. A. convention of the committee's rules for the investigation of old bridges. Mr. Selby was particularly impressed by Fig. 2, accompanying Mr. Loweth's paper, which presented impact effects in an entirely different light. The plotting of the results of tests on individual bridges had seemed to indicate that there was a critical speed for each structure for which the impact effect was the greatest, but when all the results are assembled in one chart, as in Fig. 2, a direct relation between speed and impact seems to be brought out. The classification of bridges according to the Cooper-E loading bears directly on the work of the iron and steel structures committee for the coming year, and this will unquestionably be the basis of recommendations made by the committee before the next convention. A number of roads are now following this same system.

G. A. Haggander (C., B. & Q.) stated that his department on the Burlington did not classify the bridges for the Cooper-E loading direct, but by means of a comparison between the effects of the various locomotives on that system it was found possible to use the results of calculations made for the effect of one locomotive when it was necessary to consider other power.

W. S. Lacher (*Railway Age*) raised the question as to the relative amount of time and labor required to investigate a bridge in accordance to the Cooper classification as compared with that required to determine the effect of some individual locomotive direct. It was his opinion, based on conversations with a considerable number of bridge engineers on various railroads that very few of them had carried out the classification according to the Cooper loading in anywhere near as complete a form as that described by Mr. Loweth. Obviously, any ruling by the bridge engineer on the effect of some particular piece of equipment could be made very quickly if all the bridges had been previously classified according to the Cooper loading. The question arises as to when the bridge engineer and his staff would find time to do this in the face of more urgent work. It would seem that the most workable plan would be to carry out the classification of the bridge according to the Cooper loadings each time that a call was made on the bridge engineer concerning some particular structure, and that by keeping up this practice systematically, eventually the record would be complete for all the structures on that particular line.

C. N. Bainbridge (C., M. & St. P.) emphasized the importance of permitting the office man who carries out the classification calculations to inspect the bridge so that he may have a definite knowledge of the condition of those portions of the structure which prove critical under the investigation. In his experience the inspector cannot relay this information to the office man with sufficient accuracy. Based on his experience with the investigation of a large number of old bridges, it was his opinion that much more balanced designs would be obtained if the new bridges were designed for limiting loadings and limiting stresses. With structures designed for prevailing loadings and ordinary unit stresses, the heavier loadings too often result in greatly overloading a few members, which are disproportionately weak under these heavy loadings, as compared with the rest of the structure.

Mr. Bainbridge also called attention to the one important advantage of a uniform system of classifying both bridges and locomotives through the facility this would give for the exchange of information between roads when it became desirable to detour trains or to haul foreign locomotives over the line. There is a prevailing lack of appreciation of the character of information which the bridge engineer must have if he is to pass on the loading effect of a locomotive or some other equipment. The officers of some railroads seem to think that a statement as to the total weight of the engine and maximum axle load is all that is necessary, but this will not suffice.

C. F. W. Felt (A., T. & S. F.) said that the practice of re-erecting old bridges on branch lines of light traffic did not always work out economically, owing to the fact that it was found desirable to use heavier power on these branch lines sooner than had been expected. The presence of these light capacity bridges on the branch lines is often found objectionable in the case of temporary shortages of power, making it desirable to use the heavy locomotives on branch lines temporarily, while changes in traffic routes sometimes result in greatly increasing the train movement over what had been considered a light traffic line.

THE COLORADO SUPREME COURT on March 14, ordered the Denver, Boulder & Western to resume operation. The court decision held that the order of the Colorado Utilities Commission, which led to the scrapping of the equipment of this road, was unwarranted, as the road had performed a necessary service and must resume operation in the interest of public policy. The line extends from Boulder, Colo., to Eldora, and from Sunset, Colo., to Ward; total length operated, 53 miles.

Railroad Plan Proposed by S. Davies Warfield

National Railway Service Organization Suggested in Modification of Plans Presented to Congress in 1919

WASHINGTON, D. C.

A PLAN OF RAILROAD ADMINISTRATION described in a statement to the press as one which "will produce far-reaching results, will ensure annual savings of millions of dollars, increase facilities and service, and lower railroad fares and rates," has been filed with Senator A. B. Cummins, chairman of the Senate Committee on Interstate Commerce, by S. Davies Warfield, president of the National Association of Owners of Railroad Securities, accompanied by numerous exhibits, including a bill to carry out the proposed plan. In a separate letter to Senator Cummins, Mr. Warfield says that "unless intensive economical methods in railroad administration are adopted there is no alternative but government operation, followed by government ownership, although the country has given overwhelming evidence of being opposed to it." Representatives of the association will later appear before the Senate committee to formally present the plan in further detail in connection with the proposed investigation into the causes of the unsatisfactory condition of the railroads.

The plan is a modification of that advocated by the association before the committees of Congress in 1919. It provides that the existing machinery of transportation, as far as practicable, shall be co-ordinated through the organization, by act of Congress, of the National Railway Service; as an agency, first, to purchase cars and other equipment to be furnished to the railroads on an economical basis, without profit; and, second, to afford the means for co-ordinating facilities and service.

The plan as briefly summarized in the press statement provides:

(a) The Interstate Commerce Commission to select five from among its members to constitute the Service Division. This division to have supervision and initiatory and regulatory powers to be exercised through the board or staff of the National Railway Service.

(b) A board of 40 members subdivided into two divisions—Finance and Administrative, and Railroad officials, 20 members each. A chairman, four vice-chairmen, treasurer, secretary and other officials. An executive committee of 11 members.

(c) Four group railway boards each organized and selected from and by each group of railroads as now constituted by the commission in each of the four rate territories into which the commission has divided the country. Four boards in all, each to consist of seven members, five selected by the railroads of each group and two from the shippers located in each group territory. (The 20 officials forming these four boards will serve as the Railway Officials Division of the National Railway Service Board.)

(d) Ten committees of five members each to co-operate with each of the four group boards and selected from the railroads of each group. This means four group railway boards, and 40 committees in all. These committees will cover a large range of investigation and report.

(Included in which are: Normal equipment requirements of each railroad; additional equipment to be leased from the National Railway Service; standardization of equipment; useless expenditures incident to wasteful competition; a study of joint use of terminals, yards and shop facilities; surplus property not required in legitimate transportation—cost of carrying; purchases of fuel and supplies; application of a standard of efficiency in railroad operations; working conditions—wages, etc.)

(e) The National Railway Service Corporation, recently organized by the association of security owners to furnish equipment to the carriers by conditional sale or lease, is superseded by the National Railway Service with extended powers for financing and leasing equipment under plans it is said will save many million dollars in preventing duplication of equipment by the carriers, now necessary when each carrier is required to buy its maximum equipment requirements. (The 20 trustees of the Service Corporation will serve as the Finance and Administrative Division of the National Railway Service Board.)

Railroads Already Divided in Groups

It is pointed out that the commission has already divided the country into four territories within which the respective railroads are grouped, and that rates are adjusted to meet the varying conditions of the respective territories. These and other conditions obtaining in each territory and the vast area covered are declared to necessitate the organization of the carriers constituting each group under a Group Railway Board to effectively dispose of matters affecting the roads of each group. These four group railway organizations would be made obligatory by act of Congress, with power to organize committees from each group to bring about the co-ordination and economies in facilities and service now or hereafter considered necessary and essential to the public welfare.

The National Railway Service Corporation (superseded by the National Railway Service), which was organized by the association of security owners under state laws, has sold trust certificates, and with the assistance of loans made to the corporation by the government, is supplying equipment to certain railroads. It is proposed that the excess earnings created under the transportation act shall be used in connection with the sale of trust certificates of the National Railway Service to provide for the purchase of equipment for the railroads. Equipment would be leased by the service to the roads to meet seasonal requirements, and thus be used at different times on different railroads. "The savings in this method of handling equipment would be very great," says the statement, "the rental cost to the railroads would be gradually cut down and railroad rates correspondingly lowered."

Congress is asked to provide that in the event of default by a carrier purchasing equipment, the receiver be required to carry out the contract made by the defaulting carrier and continue payments as a first charge against operations. It is stated that "this will place the equipment obligations of the National Railway Service on an investment basis of pronounced safety and assure the securing of money on especially favorable terms."

Great Problem of American Transportation

"The great problem of American transportation," the statement continues, "has been to find the means to co-ordinate the natural advantages of individual railroad management and operation without destroying initiative and incentive." Certain consolidations of railroads are necessary, it is stated, but an emergency now exists and the public is entitled to more immediate and substantial benefits than can be derived from the great physical consolidations of railroad properties, by immediate provision for the co-ordination as far as practicable of the facilities and service of the existing railroads and systems.

Present Methods That Are Available

"Before a decision is reached in respect to the suggestion herein contained," the statement continues, "which means the solution of the greatest remaining transportation problem yet unsolved, it becomes necessary for the Congress to consider the conditions under which the transportation system is now required to function, as a whole—what have been

and are at present the methods employed. Two methods have thus far been available":

(1) The voluntary action of an association composed of railroad executives, each representing distinctly conflicting interests, which has been tried; the results speak for themselves. In the nature of things voluntary action must fail in the effort to deal with the inherent complexity and difficulties of transportation in its national aspect. Prior consideration has been and must necessarily, under voluntary action, continue to be given to the interests of the individual railroads by those who represent them, and individual points of view which are not consistent with the broader interests of the public have always controlled and must continue to control.

(2) The other method is through the enlargement or extension of the regulatory powers of the Interstate Commerce Commission—the government authority—into those of operations, now properly employed as emergency powers. This extension of these powers, made permanent, would mean government operation.

The latter method is declared to be inconsistent with the continuance of initiative and eventually of private operation because it throws upon the commission an already overtaxed regulatory body, the responsibilities of railroad operation; the statement also says that the commission would likely rather not be thus burdened but would prefer that its duties continue to be regulatory and confined to the supervision of the organization or agency suggested.

The first named method is therefore asserted to be the only present means at command to bring about economies by the co-ordination of facilities and service essential in the public interest.

Shall Goverment Regulation Extend to Operation

"The question now to be decided—and its decision is of most vital concern," the statement continues, "is whether the powers necessary to the co-ordination of facilities and service do not extend beyond those of *regulation* and into the field of railroad *operation;* and whether these powers shall be performed by the governmental *regulatory* agency alone, or whether Congress shall enable and *compel* the railroads themselves to bring about such co-ordination of facilities and service, under the *supervision* of the commission. This is essential if incentive and initiative are to be preserved and private ownership survive."

"We have always favored extended regulatory powers being given the commission," says Mr. Warfield, "but should government regulation be extended to the point of operation with the tremendous indebtedness of approximately $1,300,000,000 of the carriers to the government with their great financial necessities, the distance from private to government ownership of the railroads is indeed narrow.

Railroad Men and Public Service

"The suggestions herein are based on the belief that only under private operation fully regulated by the commission can transportation facilities and service be supplied adequate to the full development of agricultural and business pursuits, and that the railroads have among them able and competent men of large experience who should be subject to call to perform service of public concern in addition to their duties on the particular railroads by which they are employed. This would give a staff, free from political influences, to aid and co-operate with the commission in carrying out such instructions as Congress, by act, may deem necessary.

Inherent Weakness of Present System

"These statements of fact are not in criticism, but disclose a weakness inherent in the prevailing voluntary system which Congress must consider in deciding the necessity for the establishment of a comprehensive means to ensure economy in railroad operation which the public asks and later will demand. The employees are concerned, for economical methods of railroad operation are essential to steady employment at fair wages."

Insurmountable difficulties are said to prevent the bringing about of the readjustment, which is now indispensable, by the voluntary action of an association of executives of railroads, which "necessarily represents the views of a small controlling group. Continued evidence is given of these difficulties," the statement says, "in the hasty and ill-considered action as expressed in the recent application before the Railroad Labor Board at Chicago to annul the so-called national agreements with employees during federal control, which left no alternative to the board, but to dismiss the demands as presented.

"The methods adopted have unnecessarily arrayed the employees against the railroads, and deferred the rehabilitation of the properties which depend upon the re-establishment of their credit and the good will of the men identified with them. That adjustments are essential in respect to working conditions and amounts paid many of the employees of railroads is generally recognized, but it should be made plain that these adjustments are a part of a general system of economies which must be instituted if adequate transportation is to be supplied at reasonable rates. The transportation act is definite in requiring orderly procedure for the adjustment of wages, which was not followed.

An Underlying Difficulty

"There are two distinct departments in the conduct of the affairs of a railroad, each requiring talents widely differing; one, administration, the other, operation. Questions of business and public policy have often been decided by those whose training has not been along those lines. This has been the underlying difficulty and has led to the positions taken by some of the controlling factors in the railroad world which have caused unfortunate results.

"The prohibitive features of the Clayton act now in effect make this situation more acute. The act requires that officials of financial and other institutions shall resign as directors of railroads with which their institution may have relations. This deprives the roads of the advice and service only obtainable from men of broad and varied experience acquired from the environment that now disqualifies them. Railroad directorates will be composed largely of men with little or no business experience or financial interest in the properties they manage, or of what are known as 'dummy directors,' or of both. The proposed bill provides safeguards in respect to railroad directorates to protect the public and the roads, while providing a broad and effective management.

A Crisis Exists

"A crisis exists, culminating from a combination of conditions. The railroads were not returned to their owners in the condition required by Congress under the federal control act. The act called for the return of each railroad *'in substantially as good repair and in substantially as complete equipment as it was in at the beginning of federal control.'* The service of the carriers had become demoralized and their business and organizations disrupted. No cash was turned back upon their return.

"An increase in rates of 25 per cent only was made during federal control by the director general of railroads. This it has been estimated yielded approximately $1,113,000,000 to pay $2,750,000,000 (estimated) increase in operations. Had rates been advanced proportionately as expenses were increased, they would have been absorbed in general business activities and profits of the war period and not appreciably felt. This was not done, and the commission was faced with the necessity of meeting these extraordinary and unprecedented conditions.

"The commission, basing its calculations on a normal

increase in the gross revenues of the railroads, adjusted rates to yield the return called for by the transportation act. Then rapidly came violent after-war readjustment. The gross revenues of the railroads, instead of increasing, declined 21 per cent from the average of the period, March 1 to September 1, 1920, and a falling off of 31 per cent from what had reasonably been expected. The selling prices of commodities—such as cotton, grain, lumber, general merchandise, perishable fruits, vegetables, etc.—have fallen with such unprecedented rapidity that freight rates necessarily show a disproportionate ratio to the selling price of the products transported. Low prices for commodities have slowed down shipments, causing the equally unprecedented drop in railroad revenue, and the expected return has not materialized, which would have resulted under normal conditions.

Conclusion

"The questions involved require prompt decision. The railroads must recognize that only drastic measures on their part will save them from being swallowed up in the demoralization that government operation and after-war readjustment has brought upon them. It may be that a different result could not be expected. There is a point beyond which rates and fares cannot be advanced because of the conditions the war has forced upon the country, although more revenue is necessary because of the conditions government operation has forced upon the railroads.

"This situation may well be seriously considered by the executives of the railroads. The questions now at issue are not how much authority can continue to be exercised by a railroad executive; not how far a railroad can hold on to the single use of a terminal or other facility that by joint use would institute a saving and fix a policy to save all, but whether the railroads will recognize that the crisis has been reached which will decide the fate of private ownership and operation and that all must submit to a readjustment of methods which perhaps few would desire could it be avoided. This is the situation we face, it cannot be ignored. The employees should bear their part in meeting the present emergency, the railroads should bear theirs through advanced methods of economy.

"Whatever is stated seemingly of criticism is not so intended; it is a system that is under discussion. American transportation has outgrown it; facts are necessary, the Congress cannot be expected to deal with the serious problems it is now called upon to solve unless in possession of every phase of transportation having a bearing thereon."

Railway Employees and Their Compensation

Interstate Commerce Commission Issues Report Showing Payroll and Average Earnings Under Wage Award Now in Effect

WASHINGTON, D. C.

AS BRIEFLY REPORTED in last week's issue, the Interstate Commerce Commission has issued its quarterly statistical report on employees, their compensation and service for the third quarter of 1920, giving the first official statistics showing the effect of the wage award of the Railroad Labor Board of July 20, 1920.

In this and the reports for the first and second quarters of the year the number of employees of Class I roads by months is shown as follows:

January	2,000,105	June	2,056,381
February	1,970,525	July	2,111,280
March	2,009,948	August	2,197,824
April	1,952,446	September	2,164,880
May	2,005,483		

The average number of employees for each quarter and the total payroll as shown in the reports, with the average compensation per employee per month deducible therefrom, are as follows:

	Number employees	Total compensation	Average per month
First quarter	1,993,525	$795,616,330	$133
Second quarter	2,004,760	801,063,938	133
Third quarter	2,157,989	1,052,109,451	162

The commission has also issued another report compiled by its Bureau of Statistics on the increase in compensation resulting from the wage board award. The compilation relates to the single month of July, 1920, and as switching and terminal companies are not included, the number of employees reported as in the service at the middle of the month, 2,080,687, is somewhat below the corresponding figure shown in the quarterly report. The number reported as receiving additional pay from the wage decision is 1,987,658. The payroll basis immediately prior to the wage decision is given as $285,778,515, and the increase resulting from the award as $59,946,608 for the month, but because employees whose names appeared in the payroll had not all remained in the service, the amount of the increase reported as payable is given as $58,855,968. The report includes a table giving the total increase in compensation for each class of employees and the percentage of increase. This table has been combined herewith with some of the tables of the quarterly report referred to, but the percentages of increase are based on the total compensation for the employees of the class and not upon the average compensation per day or hour, which is given in another column.

It will be noted that the increases in compensation are those resulting from Decision No. 2, regardless of whether or not they were specifically covered thereby. Some persons, for example, classed as general officers or their assistants, received advances in salary to maintain a relation between their salaries and those of other employees.

The average number of employees and their total and average compensation and average hours or days per month during the quarter are shown in the table on the following page, with comparisons with the average compensation during the preceding quarter before the wage advance.

The average monthly compensation paid during the quarter, as computed from the above table, for some of the principal classes of employees was as follows:

Section foremen	$168.10
Section men	112.52
Other unskilled laborers	118.14
Clerks below $900 per annum, averaging 2,703 persons per month	68.73
Clerks $900 p.a. and upwards averaging 244,854 persons per month	146.37
Messengers and attendants	90.96
Machinists	195.11
Boiler makers	202.02
Blacksmiths	186.10
Masons and bricklayers	161.70
Structural iron workers	174.78
Carpenters	168.95
Electricians	184.44
Car inspectors	203.25
Car repairers	183.74
Other skilled laborers	185.20
Mechanics' helpers and apprentices	139.06
Train disp. and directors	266.10
Teleg. and telephoners and block oprs.	155.46
Levermen (non telegraphers)	152.79
Yard engineers and motormen	237.56
Yard firemen and helpers	181.30

Yard conductors (or foremen)	228.85	Road pass. eng. and motormen	288.61
Yard switchtenders	157.37	Road pass. firemen and helpers	218.59
Hostlers	182.02	Road pass. conductors	261.42
Road freight firemen and helpers	219.27	Road pass. brakemen and flagmen	186.52
Road freight engineer and motormen	303.80	Crossing flagmen and gatemen	97.05
Road freight conductors	266.20	Drawbridge operators	122.19
Road freight brakemen and flagmen	209.82	Policemen and watchmen	154.13

SUMMARY OF EMPLOYEES, SERVICE AND COMPENSATION: CLASS I ROADS (INCLUDING SWITCHING AND TERMINAL COMPANIES), QUARTER ENDED SEPTEMBER 30, 1920

(Class I Roads Are Those Having Annual Operating Revenues Above $1,000,000)

Class of employees	Average number of employees in service	Total compensation	Average compensation per day or hour	Average number of hours or days per employee per month	Average compensation per day or hour in previous quarter	Increase in compensation resulting from wage award	Per cent of increase
General officers, $3,000 p. a. and upwards	7,237	$11,614,393	*$19.113	*28.0	*$18.987	$114,733	3.41
General officers, below $3,000 per annum	1,809	1,052,369	*7.088	*27.4	*6.734	40,703	11.79
Division officers, $3,000 p. a. and upwards	7,935	7,986,870	*11.502	*29.2	*10.771	232,842	11.51
Division officers, below $3,000 per annum	5,892	3,970,850	*7.683	*29.2	*7.005	191,843	13.85
Clerks, $900 p. a. and upwards	244,854	107,749,643	.697	210.	.573	6,515,205	22.25
Clerks, below $900 per annum	2,703	557,647	.358	192.	.325	51,782	22.86
Messengers and attendants	11,735	3,206,341	*3.332	*27.3	*2.750	190,209	21.73
Assistant engineers and draftsmen	11,000	6,105,510	*6.958	*26.6	*5.980	283,985	16.94
M. W. and S. foremen	8,784	5,419,246	*7.385	*27.8	*6.130	304,937	19.89
Section foremen	42,776	21,586,277	*5.837	*28.8	*4.537	1,632,374	28.30
General foremen—M. E. department	1,930	1,574,099	*9.941	*29.1	*8.556	73,109	15.47
Gang and other foremen—M. E. department	25,909	18,765,269	*8.429	*28.6	*7.167	889,165	16.86
Machinists	65,364	38,290,703	.895	218.	.764	1,968,495	18.13
Boiler makers	20,888	12,657,241	.910	222.	.776	644,549	17.92
Blacksmiths	11,241	6,284,327	.882	211.	.761	348,444	19.60
Masons and bricklayers	1,253	609,391	.756	214.	.627	37,710	22.27
Structural ironworkers	791	415,364	.861	203.	.711	17,235	18.38
Carpenters	55,727	28,255,362	.775	218.	.643	1,671,717	21.61
Painters and upholsterers	15,572	7,806,020	.802	208.	.682	437,759	20.31
Electricians	15,469	8,865,241	*7.094	*26.09	*6.068	449,749	18.51
Air-brake men	8,160	4,668,978	.852	224.	.724	250,756	19.13
Car inspectors	27,041	16,510,906	.854	238.	.722	892,618	19.23
Car repairers	93,478	51,458,372	.839	219.	.704	2,762,840	19.70
Other skilled laborers	61,850	34,314,995	.838	221.	.712	1,827,085	19.10
Mechanics' helpers and apprentices	138,153	57,589,979	.635	219.	.511	3,924,457	25.97
Section men	341,560	115,548,100	.485	232.	.401	6,723,809	21.66
Other unskilled laborers	129,093	45,720,691	.537	220.	.450	2,563,835	20.63
Foremen of const. gangs and work trains	1,927	1,132,562	.770	255.	.622	76,187	24.39
Other men in const. gangs and work trains	32,184	11,976,037	.518	239.	.430	625,704	20.31
Traveling agents and solicitors	3,865	2,557,651	*8.096	*27.2	*7.224	86,174	11.83
Employees in outside agencies	1,272	700,331	*7.193	*25.5	*6.047	30,273	16.09
Other traffic employees	440	275,583	*7.811	*26.7	*7.235	11,901	13.91
Train dispatchers and directors	6,256	4,988,827	1.162	229.	1.031	192,503	13.16
Telegraphers, telephoners and block operators	22,380	10,447,262	.673	231.	.579	531,687	17.84
Telegraphers and telephoners operating interlockers	8,264	4,017,919	.683	237.	.585	200,797	17.63
Levermen (non-telegraphers)	3,995	1,832,256	.634	241.	.543	94,883	18.98
Telegrapher-clerks	12,686	5,924,900	.664	235.	.564	306,862	18.01
Agent-telegraphers	19,866	9,824,552	.689	239.	.586	502,915	17.80
Station agents (non-telegraphers)	13,844	7,162,714	*5.978	*28.8	*5.198	317,254	15.33
Station masters and assistants	635	389,415	*6.791	*30.1	*5.783	22,629	20.32
Station service employees	126,963	48,347,779	.570	223.	.464	3,068,925	23.65
Yardmasters	4,481	3,914,241	*9.625	*30.3	*8.317	167,522	15.71
Yardmasters' assistants	3,867	2,995,036	*8.745	*29.5	*7.400	138,245	17.49
Yard engineers and motormen	23,226	16,565,136	.939	253.	.777	951,223	22.72
Yard firemen and helpers	23,608	12,861,167	.734	247.	.575	894,520	29.17
Yard conductors (or foremen)	22,535	15,484,526	.901	254.	.706	1,024,897	27.57
Yard brakemen (switchmen or helpers)	56,523	34,803,177	.845	243.	.666	2,343,179	27.51
Yard switch tenders	6,401	3,021,387	.653	241.	.530	191,364	25.32
Other yard employees	5,051	1,972,770	.552	236.	.445	130,739	24.79
Hostlers	12,299	6,721,995	.731	249.	.581	499,282	28.55
Enginehouse-men	75,640	31,304,511	.551	250.	.452	2,000,043	23.73
Road freight engineers and motormen	34,542	31,525,448	1.173	259.	1.017	1,445,334	16.28
Road freight firemen and helpers	36,914	24,291,968	.895	245.	.743	1,388,208	21.19
Road freight conductors	28,165	22,502,162	.968	275.	.830	1,170,017	18.95
Road freight brakemen and flagmen	69,491	43,805,186	.780	269.	.641	2,734,922	23.90
Road passenger engineers and motormen	13,439	11,627,729	1.330	217.	1.193	490,108	14.23
Road passenger firemen and helpers	12,973	8,519,535	1.036	211.	.881	447,721	18.31
Road passenger conductors	11,169	8,764,427	1.122	233.	.975	429,689	15.90
Road passenger baggagemen	5,919	3,511,938	.840	235.	.689	211,660	21.66
Road passenger brakemen and flagmen	16,547	9,269,288	.829	225.	.672	611,076	24.07
Other road train employees	3,637	1,741,094	.669	239.	.562	96,526	19.77
Crossing flagmen and gatemen	23,635	6,886,955	*3.203	*30.3	*2.683	426,119	22.56
Drawbridge operators	1,742	639,384	*4.046	*30.2	*3.424	34,560	19.11
Floating equipment employees	11,407	5,469,724	.609	262.	.548	197,899	12.59
Express service employees	.....	.....	.....	.....	.....	.....	.....
Policemen and watchmen	13,145	6,086,989	*5.087	*30.3	*4.361	350,014	20.19
Other transportation employees	5,562	2,356,462	*4.943	*28.6	*4.179	105,236	15.98
All other employees	23,282	7,205,244	*3.675	*28.1	*3.332	355,866	16.70
Total	2,157,989	$1,052,109,451	.....	.....	.....	$59,946,608	20.98

SCHEDULE B—SERVICE AND COMPENSATION OF ENGINEMEN AND TRAINMEN†

Class of employees	Number of hours on duty	Number of miles actually run	Total compensation	Average compensation per mile run
Road freight engineers and motormen	26,313,914	212,933,767	$30,736,013	$0.144
Road freight firemen and helpers	26,528,212	214,653,823	23,658,391	.110
Road freight conductors	22,907,734	188,495,553	21,989,968	.117
Road freight brakemen and flagmen	55,130,349	443,465,413	42,903,283	.097
Road passenger engineers and motormen	8,648,485	150,880,441	11,540,815	.076
Road passenger firemen and helpers	8,179,682	146,542,177	8,466,498	.058
Road passenger conductors	7,729,039	148,212,464	8,668,356	.058
Road passenger baggagemen	4,120,963	80,648,541	3,474,615	.043
Road passenger brakemen and flagmen	11,031,110	213,826,148	9,143,345	.043
Other road train employees	2,398,885	44,079,508	1,578,159	.036

*Represents average computed on a daily basis.

†The number of hours and compensation shown in Schedule B do not agree with the corresponding items in Schedule A for the reason that carriers were instructed to omit from Schedule B the time and compensation against which no mileage was recorded.

Note—This statement is on the new basis of wages resulting from Decision No. 2 of U. S. Railroad Labor Board, and does not include any back pay retroactively attributable to the months of May and June.

Dictating Machines in Use in the Office of the Auditor of Revenue

Securing Increased Efficiency in Railway Offices

New York Central Adopts Investigating Committee Plan— Findings in Case of Dictating Machines

AS THE FIRST STEP in its program of increasing efficiency in its offices the management of the New York Central realized that a thorough investigation of the methods and appliances in use in the office in question was the first essential. This matter involved seeking out wastes of time, effort and space. The next step to be taken was the adoption of a means of conducting this investigation, which would, in the first place, secure accurate information concerning actual conditions in the office and, in the second place, interfere as little as possible with the detail work going on in the office.

To secure a report on the performance of an office which would be known to be accurate and inclusive of all details, it was decided that the investigation should be conducted not by one man but by a committee of two or three officers who by their long experience in railroad office work were eminently qualified to undertake the task at hand. Such a committee was accordingly appointed some months ago and charged with the duty of making investigations in any of the company's accounting departments and reporting in full on its findings.

The managers of each such department have been acquainted with the company's policy in this matter and have been requested that, should their department be selected for investigation, they permit perfect freedom to the committee in its work and co-operate fully with it. In other words, the committee has been given a free hand in its work and has the right to examine the employees in their work, to ask any questions deemed necessary, to study all the office records and, in short, to do everything necessary in order to secure accurate information concerning the functioning of the office from a standpoint of economy and efficiency.

Already this committee, working with the department managers, has rendered valuable service, particularly in solving problems in connection with the employment of office appliances which save time and money in certain departments, the work of which is adaptable to the use of these appliances. Under the present plan the company, before

STENOGRAPHIC DAILY PERFORMANCE - MONTH OF NOVEMBER 1920

DEPARTMENT _____ STENOGRAPHER _____ DATE NOV. ____1920

ON DUTY		TIME TAKING DICTATION		NAME OF DICTATOR	TRANSCRIBED FROM SHORTHAND NOTES			TIME OF STATEMENT AND OTHER WORK		TIME DISENGAGED AWAITING ASSIGNMENT OF WORK		REMARKS
Hours	Min.	Hours.	Min.		No.of Lines	Hours	Min.	Hours	Min.	Hours	Minutes	
Total												

Chart 1

making any changes in methods, systems or appliances, conduct an investigation which will give authoritative information concerning the probable savings to be effected by such changes. The element of chance ordinarily involved in such changes, due either to indifference or the lack of exact knowledge, is thus entirely eliminated.

The committee has recently conducted an investigation relative to the use of dictating machines in the accounting department offices at Grand Central Terminal which has resulted in demonstrating that an investment of $5,400 in these machines would save approximately $20,000 per annum in the payroll in addition to a saving of 560 sq. ft. of office space, 14 desks, 14 chairs and 14 typewriters, all of which were thus made available for productive use elsewhere. It was learned that 17 girls could perform the services which before the introduction of these machines required 31 stenographers. With proper usage the life of the machines is at least seven years, and during this period the company estimates its savings at $134,600 (the annual saving for seven years, less the cost of the machines).

CORRESPONDENCE PERFORMANCE OF STENOGRAPHERS

DATE 1920	Number of stenographers on duty (Omit Secretary or personal steno.)	# Lines Written			Taking Dictation		Time on statements, bills, or other work	
		Number	Time Hours	Time Min.	Time Hours	Time Min.	Hours	Min.
Nov. 1								
3								
4								
5								
29								
30								
Total								

Each writing of letters or copies of letters, memorandums and telegrams shall be counted as a letter ... carbons of original must not be counted.

Chart 2

In arriving at this conclusion the committee first caused a record of stenographic performances to be kept in each of the offices of the accounting department during the entire month of November, 1920. Each stenographer made a daily performance report on a form shown herewith in chart No. 1. These reports were summarized for the month on chart No. 2. A similar report was compiled in offices already equipped with dictating machines, and the two were summarized side by side on a study form, as shown in chart No. 3. The hours were reduced to clerks where necessary by dividing the total hours worked by the number of hours assigned to an average employee. The other calculations shown in the chart are self-explanatory.

The lowest stenographic production in any office was 56 lines per hour and the highest was 83 lines per hour. The performance of the dictating machines on the New York Central was compared with similar records of certain other companies and the figure of 137 lines per hour was decided upon as being a reasonable production per operator when these machines were used. This estimated production was used in determining the force of operators required to care for the correspondence of the offices to be equipped.

It was found that the best results were obtained by equipping each office with the number of machines required to care for the entire correspondence of the office. All the stenographers were temporarily retained and each supplied with a machine. In this manner all the stenographers were given instruction concerning the operation of the machines at the same time, and no correspondence was delayed. At the end of about thirty days the employees who showed the greatest proficiency in their work were retained and the remainder were either dismissed or assigned to other duties where vacancies permitted.

Experience in installing these machines leads to certain conclusions concerning them. In the first place, it is well to bear in mind that the value of the dictator's time ranges from two cents to ten cents a minute, while a dictating machine will cost about ten cents a day, including interest and depreciation. The number of machines required is determined with regard to the organization and methods of conducting correspondence, which differ in the various offices. In some offices the practice is to have all correspondence handled by correspondence clerks. In other cases, each clerk

DEPARTMENT	- STENOGRAPHERS -									LINES WRITTEN	
	- Number -					- Hours -					
	Supervisor	Stenos	Total	On Statement & other work	Available for transcribing	Taking Dictation	Transcribing	Idle	Total	Number	Average per hour

Chart 3.—Left Hand Half

Statement showing estimated saving by use of dictating machines in each office of the New York Central accounting department—secretaries, supervisors and personal stenographers omitted—month of November, 1920.

DICTATING MACHINE TRANSCRIBERS			- ESTIMATED SAVING -						
Average Number of lines per hour	TO DO REQUIRED WORK		MONTHLY		NUMBER			Office Space Square Feet	Annual payroll Amount
	Hours	Number	No. Operators	Amount	Typewriters	Desks	Chairs		

Chart 3.—Right Hand Half

dictates his own correspondence. In the case of the former, it is advisable to assign a sufficient number of machines to the correspondence clerks so that dictating machines are always available and thereby cause no delay in handling correspondence. In the latter case, where clerks have only a comparatively small amount of dictating to do, one machine might take care of the correspondence of several, but this must be determined by careful study of the actual requirements. An important factor in efficient management is to have

The Transcribing Department in the Office of the Auditor of Freight Accounts

machines available always for the convenience of those who used them and at the required time, so that matters in hand can be disposed of without delay. Perhaps the greatest advantage of complete equipment is that it enables the dictator to attend to his correspondence at first reading instead of the usual procedure of reading his papers, piling them on his desk, and then rereading them when the machine is available.

The saving in the dictator's time, while important, is not

Dictating Machines at Work in the Office of the Auditor of Passenger Accounts

so easily measured as the pay roll saving effected by reducing by a half the time required for transcribing. The machine operators are segregated from the clerical force and placed together, where freedom from interruption and the force of example make for the highest production.

It is best to locate the machine for shaving the records in a well-lighted place, so that the boy in charge of the work may see that each record gets a perfect surface. The same boy, or boys, also acts as a messenger, making regular trips throughout the office to deliver clean records to the dictator, taking the dictated records to the transcribing bureau and returning the finished letters to the dictators. The transcribing bureau should be on the same floor as the dictators where this is possible.

From the experience of the New York Central, it would appear that the installation of these machines has effected real economies. The committee will continue its work in investigating other time-saving appliances which it is proposed to install, and in a similar manner some authoritative information upon the saving to be effected can be secured before money is expended for new devices.

Freight Car Loading

FREIGHT CAR LOADING during the week ended March 12 failed to maintain the gain shown during the preceding week and fell again to 702,068 cars, as compared with 712,822 during the preceding week. This, however, represented a gain over any week of this year since January 22 and for the last two weeks the loading has been in excess of that for the corresponding weeks during the business depression in the early part of 1919, following the armistice. The loading, however, has been very much below that for the corresponding weeks of last year, or 1918. For 1920 it was 819,329 cars, for 1919 it was 701,266 cars, and for 1918, 850,701 cars, for the weeks corresponding with that of March 12 this year.

The loading of grain and grain products was 4,000 cars less than for the week before and the coal loading was not only 7,000 cars less but was less than for any week this year, but the combined merchandise and miscellaneous loading was slightly greater than for the preceding week.

The volume of freight traffic during February, 1921, as measured by the cars loaded with revenue freight, was at a lower ebb than for any month since the combined car loading figures for all the railroads have been recorded, that is, since January, 1918, according to a compilation of the car loading by months made by the Car Service Division of the American Railway Association. In February only 2,732,352 cars were loaded, as compared with 3,108,680 in February, 1920, 2,747,363 in 1919 and 3,012,286 in 1918. Of course, February is a short month and includes a holiday on Washington's birthday but the lowest previous month was February, 1919. The highest total car loading for a month as shown by the report was October, 1920, when 4,975,477 cars were loaded, as compared with 4,824,375 in 1919 and 4,671,254 in 1918. In January, 1921, the loading was 3,418,257.

The freight car surplus continues to increase. For the week ending March 15 it was 424,409, as compared with 422,207 the week before. Of the total 158,110 were box cars and 202,267 were coal cars. The increase in the surplus is entirely due to the reduction in coal loading.

The number of bad order cars has increased rapidly during the winter. On March 1, 67 per cent of the freight cars were on home roads, as compared with 21.9 per cent a year before, but 10.7 per cent, or 243,586 were in bad order. Of these 167,909 were awaiting heavy repairs.

ECONOMY OF FUEL OIL is the subject of an efficiency campaign on the Southern Pacific, began on March 16. Employees have been notified that prizes will be awarded for the best efforts. The engineman and fireman on each division who operate their locomotive with the least consumption of fuel oil will be rewarded with a trip to Chicago as the company's representatives at the annual convention of the International Railway Fuel Association, with all expenses paid, including pay for working time lost. The division making the best showing in fuel economy will receive a banner.

Wible L. Mapother

WIBLE L. MAPOTHER, first vice-president of the Louisville & Nashville since 1905, was elected president of the road at a meeting of the directors in New York on March 17, succeeding the late Milton H. Smith. For some time Mr. Mapother, as chief executive officer, had been relieving Mr. Smith of most of his duties, and in consequence his election as president was expected. Although he is well known among railroad executives, he has always avoided publicity, and his desire to escape it was illustrated by his recent wish that an editorial recently prepared for a Louisville newspaper, and paying him tribute, should not be published.

As president of the Louisville & Nashville, Mr. Mapother becomes notable at once as a veteran in point of years of service on his own railroad, and as one of the younger generation of presidents of great transportation systems. He has been in the service of the Louisville & Nashville continuously for 33 years, his entire railroad career having been with that company. His story is that of success achieved through ability and indefatigable industry and application. His loyalty to the Louisville & Nashville and to Mr. Smith, his former chief, is well known. A year ago, in fact, Mr. Smith wished to resign so as to permit Mr. Mapother to succeed him as president in name, as well as in fact. Mr. Mapother, however, used his influence to prevent this step, and stated at the time that he intended to do all in his power to induce Mr. Smith to remain as president as long as he lived, although the latter's resignation would have meant his own immediate advancement. Such traits of character have won for him the confidence of the owners of the property and the unswerving loyalty of his organization.

W. L. Mapother

It is interesting to note that not only has Mr. Mapother been in the employ of the Louisville & Nashville Railroad throughout his business career, but he is a native son of Louisville. He was born in that city on September 28, 1872. At the age of 16, after a grade school education, he entered the service of the company which he now heads as an errand boy and file clerk in the office of the secretary. He early exhibited keen interest in his work and from the start set out to fill his mind with facts and figures pertaining to the Louisville & Nashville system.

In August, 1889, less than a year after he had started to work, his unusual talents attracted the attention of Mr. Smith, who was then vice-president, and who at once transferred him to the clerical force in the executive department. This step marked the beginning of a long and intimate association which ended only with Mr. Smith's death. The closeness of their friendship is well illustrated by the fact that Mr. Smith, in one of his last requests, asked that Mr. Mapother direct the continuance of service on all Louisville & Nashville lines and in all departmental offices of the road without a moment's interruption in any detail.

In November, 1891, he was advanced to assistant clerk, and in May, 1902, he was made chief clerk in the executive offices. His next promotion, on July 16, 1904, made him assistant to the president. In this capacity his thorough knowledge of the affairs of the road, and his ability to lift burdens of administration from the shoulders of the president were so outstanding that on February 16, 1905, he was elected first vice-president. He was elected a director of the Louisville & Nashville on October 7, 1914. In November, 1915, he also became vice-president of the Lexington & Eastern, a road which had been acquired by the Louisville & Nashville in 1912.

These positions he was holding when federal control was adopted and, in June, 1918, he was appointed federal manager of the Louisville & Nashville and the Louisville, Henderson & St. Louis. A week later his jurisdiction was extended over the Nashville, Chattanooga & St. Louis, and the Tennessee Central, and in August of the same year he was appointed federal manager of a fifth subsidiary, the Birmingham & Northwestern. In this work Mr. Mapother made a fine record, becoming more widely known than formerly, and doing his full share not only toward conserving the property for the time when it would be returned to the owners, but in giving his first attention to the war needs of the government.

On February 28, 1920, when the Louisville & Nashville system was turned back to private control, Mr. Mapother resumed his position as first vice-president. As chief executive officer, he relieved Mr. Smith of many of his duties.

As aid to Mr. Smith, who has been ranked as among the greatest railroad builders and managers of his time, Mr. Mapother has witnessed and played an important part in the development of the Louisville & Nashville from a small, poorly equipped property, to a great railway system. That his efforts toward building up the railroad are appreciated by the public it serves is evidenced by the editorial comment called forth by his election as president.

"It is especially gratifying to Louisville," says one newspaper published in that city, "to know that this great railroad property, upon whose proper management the prosperity of our city and state so largely depends, will be managed in the future by a man who has grown up in Louisville, who knows the interests of this state and who may be relied upon to advance the interest of this railroad property by helping to build up the state and section it serves."

THE CHAMBER OF COMMERCE of the United States has established a Department of Transportation and Communication the manager of which will be J. R. Bibbins, late with the Arnold Company, Chicago. Mr. Bibbins is a man of long experience. He has studied terminal problems in New York, Chicago, Baltimore, New Orleans and other cities.

Hearings by New England Governors' Committee

Shippers' Interests Desire to Appeal to Congress—Comprehensive Review by President J. H. Hustis

THE COMMITTEE of thirty representative citizens, appointed by the governors of the six New England states to inquire into the railroad situation and to consider the request of the railroads for approval of their proposed general increase in rates, held hearings in Boston on Tuesday and Wednesday of last week; and the committee members of the different states are holding hearings in various cities this week.

Mercantile interests appear to have quite generally come to appreciate the importance of the question of employees' wages and it was proposed to the committee that if the United States Railroad Labor Board should not settle this matter very soon, it should be laid before Congress at Washington. William F. Garcelon, representing the textile interests, presented a statement at the first hearing. He said that the textile interests had in the past consented to freight rate increases, but that the limit had been reached. The textile interests would consent to a temporary increase if there could be adequate assurance that when the emergency was passed the rates would come down to earth again. One danger in advancing freight rates is that it would encourage the Labor Board to defer action concerning wages.

A. H. Ferguson, representing the New England Traffic League, presented a statement accusing the New England railroads of inefficient management. They have been too slow in readjusting wages. An increase in freight or passenger rates would not yield additional revenue.

William H. Chandler, speaking for the Boston Chamber of Commerce, declared that the railroads are not efficiently managed and that the whole case should go before the Interstate Commerce Commission. The Commission has in past years investigated the financial condition of the roads, but not until 1920 did it have authority to investigate operation. An advance in rates is a serious matter and should be made with extreme care. If the railroads have one foot in the grave and the other on the banana peel, it would be better to let them slip into the grave and start over again. The Boston & Albany is operated efficiently and there is no kicking about the service on that road, but on the New Haven road it is different; there is no co-operation among the officers. Criticisms of the Boston & Maine are comparatively mild. It is doubtful whether, with present wages, present prices of coal and present freight rates the roads can continue to operate, even with good management.

Several speakers emphasized the point that to increase rates would drive freight to motor trucks, which would, of course, further injure the railroads; but many merchants and manufacturers who are using motor trucks would gladly go back to the railroads if they could have efficient service. On Wednesday forenoon the committee listened to one spokesman for railroad labor, who declared that a reduction in wages could not be accepted; and to arguments for and against forcing the New York, New Haven & Hartford and the Boston & Maine into receiverships. The committee sought to get information also from the larger labor groups but were notified that the labor representatives would not appear. Only one witness spoke for labor, and he appeared in behalf of the unskilled labor in the maintenance of way department.

The Railroad's Problems

James H. Hustis, president of the Boston & Maine, on Wednesday presented a statement outlining the financial condition of his company and reviewing the general situation. Omitting details referring to the Boston & Maine's financial affairs and omitting also references to the doings of the Railroad Labor Board, with which the reader is already familiar, the substance of the address was as follows:

"The public has received all that has been possible both in rates and service, to the limit of the capacity of the railroad. The employees have also been recognized to the limit. The stockholders whose money has been invested should be recognized. All that we are now asking is an amount sufficient to bridge us over until more normal conditions return. Increased passenger fares and freight rates do not offer a permanent solution of the New England railroad question. These are already high and the tendency of a further increase may be to turn additional local freight traffic over to the motor trucks, and to some extent, to restrict travel. When conditions justify such action, some existing freight rates should be reduced and there should be a horizontal reduction in the present standard passenger fares. On the other hand there are freight rates in New England that do not yield the railroads the out of pocket cost of handling.

"It has always been the policy of the New England roads, to the greatest extent possible, to place the New England manufacturers on a parity in the common markets of the country with their competitors west of the Hudson river. There is no disposition to make a permanent change in this policy.

"In agreeing that the New England roads should be included in the Eastern group in the recent application to the Interstate Commerce Commission for increased freight rates, and in subsequently pressing the divisions case, the New England roads had this policy in mind and relieved their shippers of such portion of the burden of increased rates as is represented by the proposed settlement of that case. It was recognized that an average rate increase which would meet the needs of the Eastern group as a whole would not be adequate for us, but it was felt that it was desirable to keep New England in the Eastern group and not be forced to establish a separate New England rate group with a much higher scale of rates.

"It was expected that the disproportionate needs of the Boston & Maine would be equalized to a considerable extent by a revision of the division of through rates, but this has not yet been accomplished. The conditions which have developed since the presentation of the rate case was begun early in 1920 have tended to increase further the disproportionate needs of the Boston & Maine, and it is apparent that any settlement of the divisions case which can be reached within a reasonable time will not fully meet these disproportionate needs.

"The decision that the temporary increase in rates should include those between New England and territory west of the Hudson river has been reached with reluctance and is proposed because it seems to be the only way to meet the emergency. It is important to New England industries to be able to meet their competitors on equal terms, if the railroads can live under such rates, but it is equally important that their transportation machine should not be impaired.

"We are losing short-haul traffic to the motor truck, and there has been no compensating saving in our operating costs. Within certain limits, the natural operations of economic law will result in permanently turning over to the trucks a large amount of short-haul traffic which the railroads have handled in the past; but it is undeniably true that the rates

charged by the motor trucks are not yet on a proper basis. The trucks enjoy unlimited use of the highways and the rapidly mounting cost of maintaining these highways is borne largely by the taxpayers. Before motors came into general use the average maintenance cost of 700 miles of state highway was about $100 per mile per year but in 1918, on sections much used by trucks, the cost was averaging $1,500 per mile. Resurfacing was costing between $20,000 and $25,000 per mile on an eighteen foot road. State authorities then declared that heavy truck traffic was undoubtedly going to require city pavements on what were formerly country roads, and that this would easily double the expense compared 'to old times before the truck came.'

"* * * Making due allowance for any falling off in freight or passenger traffic, we believe that the proposed temporary rates, together with what benefit may accrue as a result of the divisions case, will yield the Boston & Maine an amount sufficient to at least meet its fixed charges. That there should be a readjustment of both wages and working conditions has been recognized by the railroad managers from the beginning, and they have taken every possible and proper course to bring about such changes within the limitations placed upon them by law.

"The Boston & Maine system consists of 2,484 miles of road. During the past ten years $52,000,000 has been placed on the property for improvements and additions of traffic. The company has put into its track 20,000 tons of new—and much of it heavier—rail each year, which constitutes the renewal of only about 5 per cent a year. The renewals should be even larger. During the ten years charges to capital account for rails have amounted to $1,200,000.

"The charges to capital account for equipment renewals have amounted to $21,800,000, and during this same period the equipment retirements have amounted to $7,500,000, leaving a net additional capital charge for equipment during that period of $14,300,000. Of the passenger-train cars on the Boston & Maine, one-fifth are more than 30 and one-half more than 20 years old. The Interstate Commerce Commission has again recommended the substitution of steel for wooden cars. To replace wooden with steel cars would mean at present prices a capital expenditure of approximately $50,000,000, and the substitution of steel for wooden cars carries with it collateral expenses for heavier locomotives to haul the heavier cars, and for yard and shop facilities for taking care of such equipment, all running into large capital investment. Bridges must be renewed from time to time to carry the heavier equipment. Capital expenditures during the past ten years chargeable to the bridge account have amounted to about $5,000,000 and there is no reason to expect that this expenditure will be materially reduced. It should rather be increased.

"* * * One recent requirement of the Interstate Commerce Commission substituting electric headlights on locomotives required a capital expenditure of $300,000, and an annual increased operating cost of about $30,000. Improvements in signalling and interlocking, looking toward safety in operation, are being adopted and extended generally as funds are available, and large sums annually should be spent in the installation of these devices, although the Boston & Maine, so far as road signalling is concerned, has maintained a high standard in this respect.

"In the test period, or three-year period prior to federal control, the Boston & Maine's average surplus over and above fixed charges was $2,074,034. At that time fixed charges included approximately $2,500,000 of guaranteed rentals on leased lines, which have since been converted into dividends on first preferred stock which are paid only when earned. On the basis of the present financial structure, therefore, the average surplus for the test period would have been over $4,500,000. * * * In 1920, if there had been no Government guarantee during the first eight months, the deficit for the year would have exceeded $17,000,000.

"In order to instal a normal amount of ties during the coming year at present prices, a further expense of about $1,000,000 will be required which has not been reflected in the estimate. Even allowing for the fact that the past few months may have been somewhat abnormal, the present deficit is more nearly at the rate of $10,000,000 per year than $6,700,000.

"The war affected the labor situation on the railroads more adversely than in outside industry largely because the railroads, with their transportation charges fixed, were unable to compete with outside industry in wage scales. And before the government took over the railroads, an increase of wages in one department on the Boston & Maine after a strike in 1917, followed by an arbitration in which officers appointed by the Federal Government participated, added to the annual cost of operation about $500,000 at a time when the railroad was unable to meet fixed charges. It resulted in a wage scale not only higher than was paid by any other railroad in New England, but generally higher than on other railroads in eastern territory.

"There are evidences of impatience on the part of the public everywhere as to the action or non-action on the part of the railroads in reducing wages as promptly as is being done in industry. * * * Let us inquire who or what organized railroad labor is. Here in New England its membership is composed of men who are known to many of you. They are citizens in the communities in which we live, many of them holding offices in the town government and in the social and fraternal organizations which abound throughout the New England States; their families likewise participate in the community life, and their children attend the public schools and many of them the higher educational institutions. In dealing with organized labor, therefore, we are not dealing with some intangible, far-off thing, but with individuals who with their families form an integral part of our citizenship. I have talked with many of them, as most of you have talked with them, and you know their views on this subject of organized labor, and the extent to which many of them sympathize or do not sympathize with the extremists on the subject. They know, most of them, that readjustments must take place; but all experience indicates that when the call of their leaders comes, most of them will respond.

"In fairness we should not forget the other side of the picture, and that when the outlaw strikes on the railroads were so prevalent throughout the country a year ago, the New England railroads were practically free of interruption. Those of us familiar with the situation know of the great difficulties of the leaders of organized labor in preventing the spread of the strikes at that time * * *."

Edward G. Buckland, vice president of the New York, New Haven & Hartford, at a hearing in Boston on March 23, told the committee that the movement for the increase was the result of a study of conditions by all the roads of this section. Referring to a statement that the Boston & Maine could rub along without increasing freight rates, he quoted figures to show that it was no more necessary for the New Haven to get increased rates than for any of the New England companies. The New Haven could "get along" if it could reduce wages covering the period of financial difficulties; a reduction of 15 per cent would give that road $11,000,000 annually. Presenting a list of securities of the road's leased lines aggregating approximately $30,000,000, he said that he was endeavoring to borrow money from New York bankers to help the road in its present situation with these securities as collateral, but the bankers were unwilling to lend on the security offered, because it did not represent an investment which was making money. He had been able to borrow $2,000,000 from Boston bankers, however.

Cross Examination on National Agreements Fails

Testimony of Railway Executives Before Labor Board Proves Boomerang to Employees

THE WIDELY-HERALDED plan of labor leaders, headed by Frank P. Walsh, their counsel, and B. M. Jewell, president of the railway employees' department of the American Federation of Labor, to develop startling facts pertinent to their demand for perpetuation of National Agreements from the cross examination of railway executives has so far fallen flat. Thomas DeWitt Cuyler, chairman; Robert S. Binkerd, assistant to the chairman, of the Association; Carl R. Gray, president of the Union Pacific and formerly chairman of the Association's labor committee, and General W. W. Atterbury, vice-president of the Pennsylvania and chairman of the labor committee before its recent abolition, have all been on the stand during the past week, and their testimony under questioning by Mr. Walsh has served only to bring out more clearly than ever before the executives' united stand for their abrogation in the interests of economical and efficient operation.

By the testimony of these witnesses Mr. Walsh attempted to prove:

1—That national boards of adjustment and National Agreements are inseparable.

2—That railway executives are divided on the question of national boards of adjustment and therefore on National Agreements.

3—That Mr. Cuyler and General Atterbury, alleged representatives of capital, have exerted a powerful influence in opposition to National Agreements as part of a general attack upon labor organizations.

4—That the carriers are organized nationally to treat labor and other problems and they therefore should treat with the employees nationally.

5—That the basic principles of the National Agreements are just and reasonable even when applied nationally.

6—That the railroads are unfairly moulding public opinion to influence the Labor Board.

7—That the labor policy of the railroads is dictated by a handful of executives.

8—That the Association of Railway Executives and its officers wield more than an advisory power.

In every instance the attempt has failed. On the other hand, the cross examination has developed anew that the universal application of rules regarding working conditions is impossible without a loss of economy and efficiency. Every tack taken by Mr. Walsh in his examination of the witnesses regarding rules and working conditions was finally reduced to a lowest common denominator—the only agreements which are practicable are those made between the men who work under them and the men who are responsible for the management of the railroads.

The witnesses named above appeared before the Board in response to its summons outlined in the *Railway Age* of March 18 (page 723). From Mr. Binkerd, Mr. Walsh elicited information regarding the history, purposes, organization and powers of the Association of Railway Executives and detailed information regarding the files of that organization which he presented in accord with the order of the Board. From Mr. Cuyler, Mr. Walsh obtained information regarding his position and influence in the Association and the extent to which publicity work has been carried and by whom. Mr. Gray proved a distinct disappointment to the labor leaders, for he outlined in unmistakable terms the opposition of the executives toward continuation of National Agreements, and met every attack on their position with opinion and evidence gained through many years of railroad experience in every part of the country. Mr. Walsh retired from the examination after a short time, leaving the interrogation of Mr. Gray to counsel for the carriers.

General Atterbury completed the wreck of the hypothetical case as visioned by Mr. Walsh. He was not only not content to take the defensive, but at times took a hand in the questioning and backed up his contentions with definite proof.

As a result of these developments the case which has been before the Labor Board practically since its inception, and upon which hearings have been held since January 10, has assumed the importance in the public mind which it deserves. The awakening of the public is expected to lead to a demand for an expeditious settlement of the controversy, which would be exactly contrary to the plans of the labor leaders, who, since the beginning of the present case, have been more interested in prolonging than in settling the dispute.

B. M. Jewell Presents a "Bill of Rights"

When this part of the hearings opened on March 18, Mr. Jewell read a "bill of rights," outlining the basic principles upon which he said the National Agreements are founded and for which the employees' representatives are fighting. This statement outlined in general the plan of attack later followed by Mr. Walsh in his examination of the various witnesses.

After stating that representatives of the employees have repeatedly attempted to have this controversy remanded to joint conferences and that "an aggressive and misguided minority of railroad executives has seized upon the question of National Agreements as the means of misrepresentation of the railway employees before the public and as the occasion for an attack on labor organizations," Mr. Jewell said:

"The fundamentals which are the basis of the National Agreement are as follows:

Eight hours as the recognized measure of the standard work day with an adequate hourly wage.

Payment for time worked in excess of the regular eight hours at proper over-time rates for the various characters of service required.

The beginning and ending of working shifts to be so arranged as to permit of reasonable living arrangements by employees and their families.

Reasonable rules for the protection of health and safety of employees.

Clear and concise definition of the work of each craft to be performed by mechanics and helpers.

The formulation of apprenticeship rules so as to develop sufficient, competent and efficient mechanics.

Applicants for employment as mechanics to be required to show that they have served an apprenticeship of four years or performed mechanics' work for a similar period and they not to be denied employment, when their services are needed, for any reason other than their inability to perform the work for which they are making application for employment.

The right of majority in each craft to determine what organization shall represent them. This organization to have the right to make an agreement which shall apply to all workers in each craft

The right of the majority of each craft on each railroad to select a committee or representatives who shall handle all grievances which may arise affecting all employees of the craft in accordance with the provisions of the agreement.

Craft, point seniority, limiting seniority to the local shops or points and not permitting interchange of seniority with other shops, crafts, or departments of railroads.

The right to organize and the protection of employees against discrimination because of membership in labor organizations or for any other reason.

"These fundamentals constitute the irreducible minimum in labor's bill of rights," he continued. "If machinery is to

be successfully established for the peaceable settlement of the disputes between management and employees on the railroads these fundamental principles are an absolutely necessary preliminary."

As a result of the carriers' recognition of these principles, Mr. Jewell said that "well rounded and smooth running machinery would now be in operation and peace on railroads and good-will between management and employees would prevail where now exists, growing distrust, dissension, dissatisfaction, and increasing rumblings of a fast approaching, costly and vicious conflict, such as existed in the railroad industry prior to December 31, 1917.

"If it is proper, and we admit it is," he continued, "for railroad management of all railroads to have a national union of management, then, by the same line of reasoning, it must be admitted that the employees are entitled to the same. Railroad management is willingly accepting all the benefits of the Transportation Act, and just as willingly and determinedly is it endeavoring to escape its burdens. The law itself is not being given the fair test which it should be given.

"The facts are, there is at present and for years past there has been, no individual and independent railroad management with which the employees could bargain collectively. Railroad managements' labor policy is practically dictated by and through a small committee. Railroad managements' policy thus dictated is then sought to be imposed upon a local railroad craft organization of employees by and through the national union of railroad management. Railroad labor's organizations and policy are formulated in order that it may hope to successfully cope with the compactly and nationally organized union of railroad management."

Attacking "the tendencies of railroad management" as "deplorable," Mr. Jewell said, "the effort to misrepresent the employees to the public, and hold up faithful and efficient railroad employees as inefficient has steadily gone forward, until now, in their desperation, representatives of management are holding out to the public as a danger signal, 'Labor's policy of centralization and nationalization dictated by a few at the top in order that the few may retain and extend their control of the railroad industry.' This last desperate effort is a gross misrepresentation."

In support of this contention, Mr. Jewell said that the Board is deluged by inspired resolutions from railroad managements through commercial organizations and others who do not understand the National Agreements, the railroad industry and the present deplorable situation and have not taken time, nor do not care to investigate the facts."

Mr. Jewell closed his statement with the charge that the appearance of General Atterbury before the Board on January 31 indicated that "the railroad executives were doubtful as to the justness and reasonableness of their request for abrogation of the National Agreements." "When Mr. Atterbury failed so completely in his effort to stampede the Board into accepting as just and reasonable the never-to-be-resurrected conditions of 1917, they then directed their efforts towards trying to secure the elimination of as many rules of the National Agreements as possible," he added.

Further Cross Examination

Following the presentation of this statement, Mr. Walsh called Mr. Binkerd to the stand. After interrogating the latter as to the organization, history, functions, etc., of the Association of Railway Executives, Mr. Walsh started to develop facts regarding the extent of the executives' opposition to the perpetuation of National Agreements and the extent to which E. T. Whiter, chairman of the Conference Committee of Managers, has voiced this opposition in his presentation. To this Mr. Binkerd laconically replied that "the executives are unanimous in their opposition to National Agreements and Mr. Whiter's presentation speaks for itself." Shifting his attack, Mr. Walsh then attempted to prove by Mr. Binkerd that if the Association has but advisory powers, Mr. Whiter and his committee were in reality unauthorized to represent the carriers before the Board. In answer to this, Mr. Binkerd showed that this committee was acting for a short time under the general policy which had already been adopted by the roads which constitute the Association and that specific authorization was made as soon as possible thereafter. After answering numerous questions regarding the files of the Association which had been submitted to the Board, Mr. Binkerd was excused.

Mr. Cuyler was called next and both he and Mr. Binkerd asked to identify numerous papers and reports taken from the files. Among these were the majority report of the labor committee of the Association, submitted to the member-roads by Mr. Gray and the minority report submitted by General Atterbury. The majority report recommended that negotiations be held with the labor organizations and that national boards of adjustment be established as a result of these negotiations. The minority report of General Atterbury, on the other hand, strongly recommended that the proposition of national boards of adjustment be definitely turned down. At a subsequent meeting of the member roads of the Association General Atterbury's minority report was adopted and immediately thereafter Mr. Gray resigned and the former was appointed chairman of the Labor Committee by Mr. Cuyler.

Turning again to Mr. Binkerd, Mr. Walsh endeavored by a series of questions to bring out the relation in time between the presentation of the majority and minority reports, Mr. Gray's resignation and Mr. Atterbury's appointment, in a fruitless effort to establish the fact that undue influence was exerted to bring about this action. Upon questioning, Mr. Cuyler stated that Mr. Gray had resigned because General Atterbury's minority report had been adopted, and he felt it would accordingly be better to step aside. When Mr. Cuyler stated that he had appointed General Atterbury chairman of the Labor Committee, Mr. Walsh began a new line of examination to develop the position and influence of Mr. Cuyler in the Association and its labor committee.

Several statements and publicity matter accredited to Mr. Cuyler were then introduced by Mr. Walsh, whose questions thereon elicited the fact that several of these statements were not written by Mr. Cuyler but by the Association's publicity organization. Mr. Cuyler, however, pointed out that nothing had been sent out in his name which had not first received his careful analysis and approval. These statements led to a direct attack upon the competency of the Association's publicity organization. This attack was directed particularly at Ivy L. Lee, publicity adviser in the East, Mr. Walsh establishing by testimony his connection with other large industries. In addition, Mr. Walsh charged that these publicity statements were sent out in Mr. Cuyler's name because of his connection with several large banking organizations, the names of which, he said, would carry great weight with commercial organizations, etc., the voice of which was taken by many to be that of the public.

The same line of attack was followed when the examination continued on March 19, with Mr. Cuyler still on the stand and Mr. Walsh attempting to prove that the information regarding National Agreements being circulated by the railway executives is unfair and inaccurate. Mr. Lee was again attacked by Mr. Walsh in the latter's examination of Mr. Cuyler. As an example of the alleged unfairness of this publicity work, Mr. Jewell produced a copy of "Railroad Information," issued by the Association of Railway Executives. This bulletin cited that $52 punitive overtime had been paid to each of five machinists on the Norfolk & Western under Rule 12 of the Shop Crafts agreement. Mr. Jewell's contention was that these payments were not made in accordance with Rule 12 and this contention was upheld by Messrs. Forrester, Hunt and Wharton of the Board on the assump-

tion that the rule quoted is in reality a rule in the so-called "southeastern agreement" and would still be in effect even if the National Agreements were abrogated. As another instance of this alleged unfairness and inaccuracy, Mr. Jewell read affidavits of employees which refuted a case outlined in Mr. Whiter's presentation and used in a press statement.

Throughout the examination so far there was an admitted effort on the part of Mr. Walsh to make National Agreements and national boards of adjustment inseparable. In support of this, the contention of General Atterbury as expressed in his minority report—that the establishment of national boards of adjustment means the continuation of National Agreements—was cited. This opinion, Mr. Walsh endeavored to establish, was known to the members of the labor committee when they adopted the majority report recommending negotiations toward the establishment of such boards.

Subsequently Mr. Walsh shifted his attack and endeavored to bring out in Mr. Cuyler's answers the fact that the outcome of the vote of member roads on the minority and majority reports—the latter was adopted by a vote of 60 to 41—was controlled largely by the votes of the New York Central and Pennsylvania. These two systems, Mr. Walsh showed, combined had a voting power of 15 and that if they had voted for Mr. Gray's report the entire situation would have been changed.

After thus pointing out the manner in which the railroads have organized to deal with matters common to all the carriers, Mr. Walsh asked Mr. Cuyler if he could consistently object to negotiating National Agreements with the representatives of national labor organizations. To this Mr. Cuyler replied that in his opinion the employees are much better protected by agreements between individual roads and their own employees.

Just prior to the end of this session Mr. Cuyler attempted to show the interest of shareholders in the question of National Agreements. This produced an avalanche of threats from Mr. Walsh, warnings from Judge R. M. Barton, chairman of the Board, and explanations from J. M. Shean, counsel of the Conference Committee of Managers. It was finally agreed to expunge Mr. Cuyler's statement from the records, although Mr. Walsh announced his intention of going into financial matters later.

Mr. Gray took the witness stand at the beginning of the afternoon session on March 1, and after outlining his experience in railroad work and in the Association's activities, the history and organization of the labor committee and its functions, and the developments leading up to the majority and minority reports, Mr. Gray nullified the attack which it was assumed Mr. Walsh would make by stating that, in his opinion, the establishment of national boards of adjustment does not mean necessarily that these boards would consider only disputes arising from the application of National Agreements. Mr. Gray further pointed out that both he, personally, and the majority report recommended conferences with the employees and not the establishment of any particular form of adjustment boards. He termed his majority report a "call to a conference."

It had been confidently expected by the labor leaders that, through the testimony of Mr. Gray, it would be possible to establish the existence of a difference of opinion among railway executives as to the justness and reasonableness of National Agreements, and thus materially weaken the carriers' case. However, the dispatch with which Mr. Gray killed this plan led Mr. Walsh, after a short time, to retire from the examination. Counsel for the railroads, however, asked Mr. Gray to present testimony as to the reasonableness or unreasonableness of National Agreements. To this Mr. Gray stated that the varied conditions existing in different parts of the country makes it practically impossible to devise rules which can be applied justly and reasonably over the whole country.

"My conclusions are reached," Mr. Gray said, "as a result of my experience as an operating officer on various railroads and as an operating officer of the Railroad Administration. I have operated railroads in many different parts of the country and I am, therefore, in a position to state that the universal application of even 'fair' rules would, in some parts of the country, produce unfair results."

The "bill of rights," previously presented to the board by Mr. Jewell, was then brought to Mr. Gray's attention, and the manner in which these rules worked out in actual practice when applied universally, was quickly pointed out.

Cross Examination of General Atterbury

On March 21 General Atterbury took the witness stand, and, in response to questioning, outlined his connection with the Pennsylvania, the Association, its Labor Committee and other railroad organizations. This led Mr. Walsh to submit a long list of organizations of executives and subordinate officials, which, he maintained, treated railroad problems nationally, and from this inferred that it was only fair that questions in which the employees as a whole were interested be treated on the same scale.

In answer to a question regarding the importance of the abrogation of National Agreements, General Atterbury said: "The abrogation of National Agreements is the most important thing before the country today."

During the progress of the examination, Mr. Walsh attempted to point out a difference in the positions taken by General Atterbury and Mr. Whiter's committee. This effort, however, failed, inasmuch as General Atterbury reiterated that he was not, and had not been, opposed to agreements negotiated between the men who are to work under them and the officers who are responsible for their application, and this, he pointed out, was a fundamental principle in Mr. Whiter's presentation.

In reply to Mr. Walsh's request that he add something to Mr. Whiter's presentation, General Atterbury read a statement which said in part:

"No more serious question (National Agreements) confronts the American people today. We have come to a parting of the ways. One road leads to government ownership, nationalization, Plumb Plan-ism, and Syndicalism,—the other road, to industrial peace, and the continuation of that individual initiative, energy and responsibility which is peculiarly American. The issue is in your hands. The sign board on one road is: National Agreements. The sign board on the other is: Negotiate directly with your own employees.

"The following quotations from the Official Circular No. 107 of the Railway Employees Department of the American Federation of Labor, which circular as an interesting coincidence, is headed 'Yours for Government Ownership of Railroads'—are illuminating.

> We are the first class of railway employees to force the understanding that the Railway Administration would negotiate and sign a National Agreement.
>
> * * * it was up to him, the Director General, to settle with us and further * * * the entire proposition would be submitted to our membership at once for a strike vote.

"The other road I have indicated leads to industrial peace. I can quote no better testimony advocating following the sign board—'Negotiate with your own employees' than the following, taken from the Report of Industrial Conference called by the President, of which William B. Wilson, Secretary of Labor, was chairman, and Herbert Hoover, vice-chairman.

> The right relationship between employer and employee can be best promoted by the deliberate organization of that relationship. That organization should begin with the plaint itself. * * *
>
> Industrial problems vary not only with each industry, but in each establishment. Therefore, the strategic place to begin battle with misunderstanding is within the industrial plant itself. Primarily the settlement must come from the bottom, not from the top.

"My views as to what the employee should not do, are as follows: (1) undermine discipline; (2) limit production; (3) demand pay for which there is no equivalent production; and (4) force the 'closed union shop.'

"I have no fight with organized labor as such. I have every desire to see its existence healthy and normal. Within reason-

able limits, it is a healthy spur to bring about fair conditions as between employer and employee.

"My views as to what the employee has the right to expect and the employer should provide, are as follows: (1) as steady employment as possible; (2) a good wage; (3) time for recreation; (4) opportunity to elevate himself in his employment; (5) a voice in determining the rules and regulations under which he should work; and (6) the right to be, or not to be, a union man. But to apply these principles, the 'dog collar' of National Agreements must be removed.

"An agreement to be properly binding must be equitable, and entered into freely by both parties; and in order that it may be intelligible and properly carried out, it is necessary that there be a common understanding. But a common understanding can only come from free discussion and negotiation.

"The so-called National Agreements were put in force on the Pennsylvania by order of the Director General. No discussion whatever was held between the employees who would work under these agreements, and the officers who necessarily would have to administer them. Nor have the employees who work under these agreements been permitted by their leaders to discuss them with their own railroad officers, or modify them as a result of such discussion."

After calling attention to the hurried effort on the part of the leaders of the shop crafts to make the question of National Agreements an issue before the Board, General Atterbury continued: "Confusion, misunderstanding and bitterness between the officers and the employees were bound to, and did follow, and are bound to continue until the so-called National Agreements are wiped out, and the officers and employees now working under them on the Pennsylvania sit down together and work out their own set of working rules to meet their own conditions. You may fairly ask what justification I may have for this statement I have just made. Your Board some time ago very wisely decided that it had no jurisdiction over the question of national boards of adjustment. That decision took that 'dog collar' off. What followed on the Pennsylvania with our men in train and engine service is typical and convinces me of the possibilities in this direction with all classes of employees. There are no cases before the Labor Board from our men in train and engine service involving grievances as a result of the train and engine service rules and working conditions on the Pennsylvania. Our men and our officers are settling them between themselves. Understand that there were in existence seven separate schedules, covering different parts of the system and you must recognize that we have varying conditions incident to serving a territory with agricultural, industrial, and climatic differences, that stretches from the straits of Mackinaw to the Chesapeake Bay, and from the Atlantic Ocean to the Mississippi river and the waters of Lake Michigan.

"Each railroad negotiating its schedules with its own employees is the road to industrial peace."

There followed an interesting controversy between General Atterbury and Mr. Walsh as to the formation of the various National Agreements. General Atterbury vigorously maintained that these agreements were obtained from the Director General by coercion and stated, in support of this contention, that Director General Hines "took strike threats too seriously; his experience in handling labor matters had been too limited." This brought forth another interesting but irrelevant discussion as to whether or not the agreements in effect prior to Federal control had been obtained by coercion, a charge which General Atterbury would not make despite attempts to lead the discussion to that end.

The next move in the examination was openly announced by Mr. Walsh when he said: "I will now try to prove that some universal rules are necessary." Following this he introduced considerable evidence regarding the legislation designed to safeguard railroad workers, various uniform rules promulgated by the Interstate Commerce Commission, etc. He then took up the rules contained in the National Agreements, and immediately found that, instead of examining the witness and directing the trend of the testimony, he was in turn being examined, and that the trend of testimony was being directed by General Atterbury. The first rule of the Shop Crafts Agreement was presented for General Atterbury's approval. Instead of approval, however, it brought forth the vigorous reply:

"The eight-hour day is a perfect farce. It is merely a means for getting more money. The rule typifies the whole business. Why doesn't the rule say 'eight hours' work shall constitute a day,' instead of 'eight hours shall constitute a day's work.'"

General Atterbury then continued to bring out defects in the universal application of rules, stating again and again in discussing the applicability of the eight-hour day to railroad service that "the length of the working day should be gaged by the character of the service rendered." The remainder of the morning session was devoted to efforts on the part of Mr. Walsh and Mr. Wharton of the board to get General Atterbury to commit himself against the basic eight-hour day, but these efforts were without avail.

The discussion over the eight-hour day continued during the afternoon session with practically no change in the character of the evidence presented. General Atterbury reiterated his assertion that the character of the service should determine the length of the working day, and all efforts to dislodge him from this position were fruitless. Again in discussing other rules of National Agreements, General Atterbury took and consistently maintained the position that "no rule is a good rule unless it is agreed to by the officers who apply it and men who work under it."

Inadvertently, perhaps, Mr. Walsh then mentioned the relative merits of piecework as compared with the hourly wage system. This led to vigorous defence of piecework by General Atterbury, who said: "The abolition of piecework has been made a bone of contention by men who would level all good Americans." Once more Mr. Walsh found himself losing control of the situation and listening to a vigorous denunciation of the policy of the employees' representatives in carrying on this fight for the perpetuation of war-time rules.

General Atterbury said: "I would negotiate agreements with our men right now if their leaders would let go." To this Mr. Walsh replied that he, General Atterbury, could legally negotiate agreements with his own men at the present time. The latter was evidently waiting for this opportunity, for he immediately produced two communications from the Railway Employees' Department of the American Federation of Labor to members of the shop crafts, telling them, in substance, not to negotiate any agreements except the complete National Agreement. Furthermore, General Atterbury took this opportunity to substantiate his term for the National Agreement—"dog collars." This expression, he said, originated in a cartoon contained in a bulletin issued by the Railway Employees' Department of the American Federation of Labor, portraying labor handing railroad management a small dog collar labeled "National Agreement." Railroad management is saying, "It won't fit." Labor is replying, "We'll make it fit." How the "dog collar" was made to fit was explained by General Atterbury by reading portions of the communication below the cartoon.

The result was both serious and amusing. Mr. Walsh, aided by Mr. Wharton, attempted to draw different conclusions from labor's statement, "We'll make it fit," but their attempts were not successful, and the course of the examination was quietly but quickly changed; however, not before General Atterbury had vigorously stated, "The leaders of the American Federation of Labor are throttling the employees and the National Agreements are throttling both the employees and the management. I don't want to take anything from the employee. I want only a fair day's work for a fair day's pay." In answer to a question by Mr. H. T. Hunt, a public member of the board, Mr. Atterbury said: "You cut the 'dog collar' off and see how quickly the Pennsylvania will negotiate agreements with its men."

On continuing this line of examination, General Atterbury exclaimed that the "whole object of National Agreements is to employ more men." Objections to this statement elicited the reply: "I am a better friend of the men than their own representatives at this table. I maintain, in fact, that the men are not being represented."

The remainder of the day's testimony was of a similar character, Mr. Walsh endeavoring to obtain General Atterbury's approval of the principles of various rules of the Shop Crafts Agreement, and General Atterbury consistently maintaining his position as has already been outlined.

The morning session on March 22 found General Atterbury still on the stand with the cross examination proceeding without results for the employees' case. The necessity for classification rules was first brought up by Mr. Walsh only to be denied in substance. Regarding this, General Atterbury testified: "I take it that this board is to quiet, not foment trouble. If it were to write standard rules instead of pouring oil on the waters it would be throwing rocks into it. The Board can't write standard rules."

Mr. Walsh stated that there have been but 175 disputes in a year under the National Agreements, and upon asking General Atterbury if that would not indicate harmony under these rules, the latter replied: "No. The boards at Washington have already given the men everything they have asked for. There is nothing more to request."

The apprentice rules in the Shop Crafts Agreement were next taken up, Mr. Walsh attempting to justify their existence by reference to so-called "abuses" which took place prior to their creatnon. This discussion ended when General Atterbury said: "I can find restricted production under every rule of the National Agreement, and this rule is no exception. You men are trying to get more money for the men; I am trying to get an honest day's work for that pay."

Regarding the representation of employees, General Atterbury maintained through a long series of questions that the principle of representation by men elected by the majority is not fair to the minority who have a right to be represented by men of their own choosing. Following this, General Atterbury outlined his definition of and views upon the "closed shop," stating in substance that he deprecates the closed non-union shop as well as the closed union shop. Furthermore, he read a circular issued by the Railway Employees' Department of the American Federation of Labor showing conclusively that that department has issued orders which establish closed shops.

The testimony during the afternoon session of the same day continued the same. Various of the rules were brought up by Mr. Walsh, and General Atterbury as strenuously objected to their application nationally.

Mr. Walsh attempted to capitalize the evidence that the Pennsylvania had maintained prior to General Atterbury's departure for France "an extensive espionage system among its employees" and had "little arsenals" at various plants. After lengthy discussion of the charges of coercion on the part of both the Pennsylvania and the employees, the subject finally dropped upon a promise by Mr. Hunt to read General Atterbury's complete report from which the charges were taken. Just prior to the closing of the morning session, Mr. Walsh produced a letter alleged to have been written by I. W. Geer, general manager of the Pennsylvania, southwestern region, to supervisory employees, in which he charged the supervisory employees to defame the labor organizations if necessary to obtain certain information. This letter was later declared to be a fake by General Atterbury and Mr. Whiter after they had communicated with Mr. Geer.

The session on March 23 opened with Mr. Walsh still trying to picture conditions on the Pennsylvania prior to December 31, 1917, by reading extracts from industrial conference records. After continued effort to get General Atterbury to approve the principle of some rules in effect or recommended as the basis for proper relations between employer and employee, General Atterbury pointed out that principles could be agreed upon, but that rules could not unless negotiated by employer and employee. He finally stated to the Board: "You give us principles; we will work out rules." He later qualified this by stating that rules so worked out would not be national rules.

Mr. Walsh then turned to apparent discrepancies in statements as to the cost of the National Agreements. General Atterbury immediately produced a statement which Mr. Walsh tried to keep from the record. This statement, which was filed with the board, showed by figures of the Interstate Commerce Commission that the estimated saving of $300,000,000 was far below the actual saving possible.

A long series of questions regarding Master Car Builders' rules, etc., and their necessity followed, but throughout the session General Atterbury maintained consistently the stand which he had already taken on this subject. This completed the examination of witnesses summoned so far, and the board adjourned until March 24, when Mr. Jewell began presentation of a long statement in reply to General Atterbury's stand before the Board.

Developments so far have not indicated when or how the labor leaders will attempt to answer Mr. Whiter's presentation, but from their present tactics it is assumed that this will not be presented until the Board has decided that the case has been delayed long enough.

Whiter's Statement

Mr. Whiter, in commenting on the progress of the case, said in part:

Five days of questioning railway officers by counsel of labor unions has failed to bring forth a single fact supporting the charges that have been made by spokesmen of labor unions against the railways and in our judgment has strengthened a case against the National Agreements.

Spokesmen of the labor unions repeatedly have charged that there is a gigantic plot to break down the labor unions, and that the efforts of the railways to set aside the National Agreements were in pursuance of this plot. They have claimed that small coteries of railway officers had got the railways to oppose National Agreements and national conferences with labor unions contrary to the views and wishes of the majority of the railway executives.

Records of the Association of Railway Executives which were put in evidence and the testimony of Messrs. Cuyler, Binkerd, Gray and Atterbury have shown that these charges are without foundation and that the railway executives always were unanimously opposed to the so-called National Agreements to which the railway companies themselves never agreed.

There was not found nor introduced nor could there have been found any evidence indicating that the railways are engaged in any attack upon the labor organizations, but much evidence showing that what they have been trying to do throughout has been to bring about negotiations between each individual railway and its own employees which would result in the establishment of rules and working conditions that would make it possible to meet varying conditions throughout the country and increase efficiency and economy of operation.

Distribution of the Railway Dollar

THE FOLLOWING FIGURES compiled by the Bureau of Railway Economics show the distribution of railway income of Class I roads in the calendar years 1917 and 1920:

ITEM	1917	1920
Total operating revenues	100.0	100.0
Charges against operations:	Percentages of Revenue	
Labor	43.3	57.8
Fuel for locomotives	10.0	10.4
Other expenses, materials and supplies, etc.	17.2	25.3
Railway tax accrual	5.3	4.6
Equipment and joint facilities—net rents	0.9	0.9
Net railway operating income	23.3	1.0
Deficit to be made up by Government, March-September, 1920	....	12.1
Net income from other sources than railway operation (non-operating income)	5.8	4.7
Gross income available for capital	29.1	17.8
Capital charges:		
Rents for lease of road	3.3	2.0
Interest	10.4	7.6
Other deductions	0.6	3.6
Dividends declared (from income and surplus)	8.0	4.5
Remainder of gross income available for betterments, reserves, and surplus	6.8	0.1

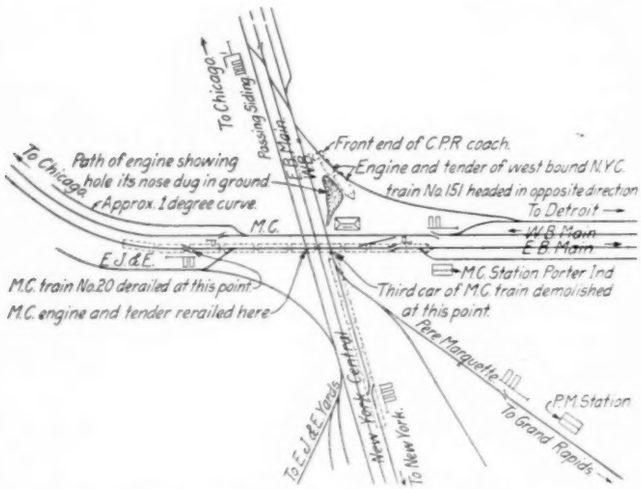
Bureau of Safety Reports on Porter Collision

Engineman's Fault Clearly Set Forth—Speed Was About 50 Miles an Hour—Fireman Also Culpable

THE INTERSTATE COMMERCE COMMISSION has issued a report, dated March 14, and signed by W. P. Borland, chief of the Bureau of Safety, on the crossing collision at Porter, Indiana, on February 27, when westbound passenger train No. 151 of the New York Central ran into the side of eastbound passenger No. 20 of the Michigan Central, completely demolishing one coach. Thirty-five passengers and two employees were killed and eleven passengers, two employees and seven other persons were injured.

This collision was reported in the *Railway Age* of March 4, page 495, and there is reproduced here the drawing which was given with that report showing the approximate location of the tracks at the crossing. The present report says that the Michigan Central crosses the New York Central at an angle of about 45 deg.; and that the train-order signal (not shown in the drawing) is 57 ft. north of the New York Central tracks and nine feet east of the Michigan Central.

Approaching on the Michigan Central from the west (southwest) the line, beginning at the distant signal, is


To Chicago
Passing Siding
E.B. Main
Front end of C.P.R coach.
Engine and tender of west bound N.Y.C. train No 151 headed in opposite direction
To Chicago
Path of engine showing hole its nose dug in ground
Approx. 1 degree curve.
To Detroit
W.B. Main
E.B. Main
M.C.
E.J.&E.
M.C. Station Porter Ind.
M.C. train No.20 derailed at this point
M.C. engine and tender rerailed here
Third car of M.C. train demolished at this point
Pere Marquette
P.M. Station
To Grand Rapids
To E.J.&E. Yards
New York Central
To New York

Scene of Collision at Porter, Ind.

tangent for 500 ft.; then a curve of 33 minutes, to the left, or 3,960 ft.; then tangent 600 ft. to the crossing. The home signal, No. 35, is on this tangent 366 ft. before reaching the crossing. The derail is in the south rail, 55 ft. east of signal 35. The Michigan Central siding, on which a freight train was standing, is at the right of the main track (not on the north side as shown in the drawing). The grade is slightly descending eastward.

On the New York Central the distant signal is about 4,500 ft. east of the crossing and the home signal is 600 ft. and the derail about 500 ft. from the crossing. At the time of the collision it was dark, and the weather was clear.

The conclusion of the report is that the engineman of Michigan Central No. 20 saw and heeded the cautionary indication; reduced speed from 60 miles an hour to perhaps 50 miles; took the word of the fireman that the home signal indication was clear; and did not look for the home signal himself, although by leaning out of the car window he should have seen it about 1,980 ft. before coming to it. The New York Central train was moving at about 50 miles an hour.

The interlocking is Saxby & Farmer, 54 levers; electric locks on all home signal levers; screw releases on the New York Central, requiring two minutes to operate, and clockwork release on the Michigan Central, set to operate in one minute. Approach annunciators are in use on both roads; the New York Central sounds when any part of the track is occupied for a distance of about two miles before coming to the crossing; and the eastbound Michigan Central annunciator operates when the track is occupied for about one mile before reaching the distant signal.

The Michigan Central distant signal is three-position, upper quadrant. The home signal is the same, but with a two-position, upper quadrant, calling-on signal below the main signal. The train order signal, 57 ft. beyond the crossing, is on a mast 29 ft. high. There is no train order signal for the New York Central.

Tower operator Whitehead said that prior to the entry of either train on the annunciator circuits, all levers were in normal position; the New York Central buzzer sounded first, and the signals were set for it before the other train announced itself, which was about 20 or 30 seconds after the N. Y. C. Whitehead, and Cook, the leverman, when they saw that No. 20 was not going to stop, started for the door; but the collision occurred before they reached it. Cook was a temporary man, his regular position being assistant signal maintainer at this tower. He said that after seeing the danger there was not time to set the home signal against No. 151; and that on account of the time release it would have taken about three minutes to change the routes.

Engineman Long, of No. 20, said that fireman Block called the home signal when at about the middle of the curve—that is to say, about 2,500 ft. from the crossing. He said "all the way," meaning that the home signal indication was clear. Long then released the brakes. Continuing Engineman Long's testimony the report says:

When the engine reached the tangent he looked for the home signal and thought he saw a green light above a red one; as he got close to the home signal he looked for the signal again, but it was hidden by smoke and steam; at that time he thought the speed of his train was between 35 and 40 miles an hour; he did not see the train order signal on account of the smoke and steam, neither did he see any hand signals. In discussing the indication of the home signal, in response to the inquiry: "What do you think caused those indications that you received?" Engineman Long replied: "The only thing that could be, if I did not have them, is that I mistook the order board for the green light." Long further stated that he does not depend entirely upon the fireman when he calls a signal and that he has never before had any trouble in distinguishing the signals at this point.

Fireman Block said that when about a mile from the home signal he observed the indication of that and the train order signal; two green lights and a red light. There was some steam or white smoke escaping from the freight engine standing on the side track, but he could see the signal lights notwithstanding. When he called "all the way" to Long, the engineman answered, after about 30 seconds, "all right." At that time, said Block, the speed was between 35 and 40 miles an hour. After the engineman answered him he got down and began to work on the fire. He did not see any hand signals given from the track.

Engineman Curtis, of the freight standing on the siding, testified that the home signal and the other blade on the same post were in the stop position when he arrived there;

and that he looked again when he saw the light of the headlight of train No. 20, and both blades were still in the stop position; he also noted that the train order signal displayed proceed. Some smoke or steam from his engine was blown across the main track. He said that it had never appeared to him that the train order signal could be confused with the home signal at this point.

Fireman Arthur, of the freight, also saw the signal blades at stop; and he observed two brakemen of his train, standing on the track, giving stop signals with their lanterns to No. 20. These two brakemen testified that they were west of the home signal; that they gave "ease off" signals with their white lights, but receiving no acknowledgment they began to give violent stop signals. One of these men was on the fireman's side and one on the engineman's side of the track; no response was received to the signals. They stated that there was no reason why their signals could not have been seen from the cab of No. 20.

The rule on the Michigan Central allows a passenger train to pass this interlocking at 40 miles an hour; that of the New York Central says 50 miles an hour. The report says:

"The speed of train No. 20 is variously estimated to have been from 35 to 55 miles an hour. There is no variation in the estimates of the speed of train No. 151; about 50 miles an hour. . . . The lapse of time between the announcement of train No. 151 and train No. 20 was 20 or 30 seconds, and as the distance between the announcing points on the two roads and the crossing is about 1,000 ft. longer on the New York Central, this time interval would place train No. 151 about the same distance from the tower as was train No. 20 when it was announced. Therefore, if train No. 151 was running at 50 miles an hour it is obvious that train No. 20 was running at a still higher rate of speed, as it arrived at the crossing before train No. 151."

No fault was found in the interlocking plant or signals. The electric circuits could not be tested on account of the destruction of a large amount of wires and trunking, but a careful check of the circuit plans, locking sheets and dog charts indicates a satisfactory condition. As the signal system was operating properly a detailed description of the circuits is deemed unnecessary. Observations made after the investigation disclosed that from the fireman's side of the engine the home signal could be seen from a point about 4,000 ft. back, and by leaning out of the window on the engineman's side at about 1,980 ft. back.

Conclusions

"The direct cause of this accident was the failure of Engineman Long to observe and obey the signal indication of the home signal. . . . A contributing cause was the failure of Fireman Block properly to observe the home signal indication and convey the correct information to Engineman Long. The evidence indicates that Long relied practically if not entirely upon the announcement by Block of the indication of the home signal instead of observing it himself. The location of the signals is such that it was both possible and convenient for him to observe the signals personally, and for his failure to do so there is no excuse. Even if he did confuse the train order signal with the top blade of the home signal, he still did not receive a proper indication to proceed at normal speed, as his movement was also governed by the train order signal, the indication of which he was required to observe before passing it.

"According to his own statement, Engineman Long received a caution indication at the distant signal; this informed him that the home signal governing the crossing was then in the stop position, and required him to proceed under such control as to be able to stop before reaching the next signal. The evidence discloses that Engineman Long observed and heeded this caution indication, as he made a brake application and slightly reduced the speed of his train. It was then necessary for him to ascertain the indication of the home signal and be governed by that signal. . . .

"Under these circumstances, knowing the arrangement of signals at this point, Long should have exercised particular care, after having received a caution indication at the distant signal, to see that the signals governing his train were clear . . . before passing the home signal and starting over the crossing at high speed. In addition to his failure to observe and obey the stop indication of the home signal, Long failed to see and be governed by stop signals given with lanterns by two trainmen of the freight train standing on the siding. . . .

"The failure of Engineman Long in this case . . . together with the appalling loss of life resulting therefrom, adds another to the already long list of accidents resulting from the fallibility of enginemen, upon whom the safety of passengers depends. . . .

"This accident again calls attention to the necessity for an automatic train control device to be used in connection with existing signal equipment. . . .

"A signal should not be called by a fireman until he is absolutely certain of its indication. In this case Block called the signal when, according to his own statement, it was nearly a mile away and partially obscured by smoke. . . . If the home signal was in this instance obscured, it was the engineman's duty to reduce speed, or to stop if necessary, and determine its indication before passing it; nevertheless, every effort should be made to so locate signals that they are not likely to become obscured by steam or smoke from engines or to be confusing. . . . It is believed the location of both the eastbound home signal and the train order signal on the Michigan Central at this point should be improved.

"It is believed that with a train running at the maximum prescribed speed limit of 40 miles an hour, the derail located 311 feet from the crossing does not afford the protection intended, and that in order actually to provide the protection intended the maximum speed limit at this point should accordingly be reduced or the location of the derail changed.

"It is noted that the coach which was struck by the locomotive was of wooden construction, with steel center-sills, and that it was demolished by the impact. While steel passenger cars generally are safer than wooden cars, nevertheless, with the tremendous impact in this case, which was applied to the center of the side of the car, it is doubtful whether greater protection would have been furnished the occupants had the car been of all-steel construction.

"Engineman Long entered the service of the Michigan Central as a fireman in 1890, was promoted to yard engineman in 1900 and to road engineman in 1901. His service record contains the following entries:

October, 1901, suspended 10 days for running off interlocking signals against him.
Sept., 1907, suspended 10 days for failure to stop for telegraph signal not burning.
Dec., 1907, suspended 10 days for failure to stop for block signal not burning.
Feb., 1909, taken out of service on account of defective vision.
June, 1909, restored to service on account of improved vision.
April 1, 1914, observed surprise test; light out on telegraph signal.
April 25, 1918, record suspension 30 days; collided with caboose car, flag out.

"Fireman Block entered the service of the Michigan Central as a fireman in December, 1915, was promoted to road fireman in February, 1916; in military service from May, 1916, to January, 1919; promoted to switch engineman in March, 1920; April, 1919, given suspended sentence of 30 days, which was later modified to reprimand, for disregarding fixed signal in stop indication.

"At the time of the accident Engineman Long and Fireman Block had been on duty 1 hour and 47 minutes, prior to which they had been off duty 7 hours and 50 minutes."

Railroads Continue Conferences With Employees

Few Indications of Early Agreement—Some Appeal to Labor Board—More Conferences Scheduled

THE CONFERENCES of many railroads with their employees during the past week have, in most cases, made it increasingly clear that the men are not disposed to accept any decreases in their wage scales without action by the Labor Board. The New York Central has asked the Labor Board to act in the case of its unskilled laborers who have refused to accept a decreased rate. Several other roads are contemplating similar action. The marine workers of some of the roads around New York are said to be favorably disposed to accept certain changes in their rates, but this is almost the only instance so far which promises a settlement without an appeal to the Labor Board.

Statement to Pennsylvania Employees

The Pennsylvania has announced reductions in the wages and salaries of many classifications of officers and employees, as was noted in the *Railway Age* of last week. On March 22, Samuel Rea, president of the road, issued a statement to the employees of the company which explained in some detail the absolute necessity of operating economies to be effected by lowering the wage rates and gave his word that the employees would receive justice and fair play in any changes made. He asked for the co-operation of the men in solving the present difficulties. The statement in full follows:

If every man on this railroad could come into my office and see for himself the facts that confront us, I would not be addressing you this way.

We have come to the necessity of reducing salaries and wages. Drastic economies have been made in every other way possible. Working forces have been reduced more than 70,000 men. With less business to handle, and wages taking the abnormal sum of nearly 70 cents out of every dollar the railroad earns, the remaining 30 cents is not sufficient to buy fuel and other materials and supplies, and pay our taxes and other obligations. There is only one way left to keep our expenses within our income, and that is to lower salaries and wages. Under such circumstances as these it is necessary to ask for your co-operation, and I have known Pennsylvania men so long that I do so without hesitation.

The directors of this company have given their word that justice and fair play will be accorded to all. I promise you that policy will be scrupulously followed.

You have been asked to send representatives to meet the general managers to discuss what are just and reasonable wages in the light of present conditions. Committees are now at work preparing new schedules of rates to submit for your consideration. It is our purpose to tell you exactly what are the facts so that all may know and understand.

All I want to ask of you is one thing: Be open-minded.

We have no intention or desire to reduce wages to unfair levels.

There is no conspiracy to disrupt your national organizations.

We are simply face to face with conditions that force the steps we are taking.

You men have assisted in making this the greatest railroad in the country. It is our job, yours and mine, to serve the public as economically and as efficiently as possible.

The railroad is opposed to the national agreements because they make it impossible to operate the road for the interest of the public as well as for the interest of the employees. One of the most unfortunate features of the present situation is the fact that these national agreements make it impossible for us to retain the most efficient employees and to pay them for the work they do and the energy, initiative and loyalty they put into the job.

We have succeeded in the past by working together with mutual good-will and co-operation. In that way alone we can succeed now, and I want to feel that I can continue to count on your spirit of fair play, common sense and whole-hearted service.

Long Island Calls Conferences

The Long Island on March 19 announced that, effective April 20, decreases in wages of certain employees would be put into effect. The statement of the company says in part:

The relation between wages of railroad employees and the cost of living, and the scale of wages paid for similar classes of work in other industries, have materially changed since the present rates of pay and working conditions became effective, and the situation imperatively demands readjustment.

In the year 1920, with only eight months of the 1920 wage award charged to operating expenses, more than sixty cents out of every dollar received by the company for transportation and other services was absorbed by wages. In the year 1917, the payrolls absorbed only forty-one cents out of each dollar received, while the relation between the payrolls and the total operating expenses was the same for the two years named. The payrolls during the period 1917-1920, inclusive, therefore absorbed all increased revenues and benefits from increased rates, increased volume of traffic, and increased capital invested.

This company cannot, by any process of rate increase for passenger and freight traffic, make ends meet, pay taxes and interest, while such a relation exists between payrolls and gross revenues.

Accordingly conferences have been called with the employees affected as follows: March 30, signal department employees except foremen and inspectors, shop employees except supervisory forces, stationary engine and boiler room forces, telegraph and telephone operators and levermen, clerical and station forces; March 31, engine and train service employees and shop and signal supervisory forces.

Reading Plans a Decrease

The Philadelphia & Reading has announced sweeping decreases in wages and salaries which will be put into effect on April 26. In the meantime conferences will be held with the employees affected in order, if possible, to arrive at an amicable agreement. The conferences are scheduled as follows: April 4, maintenance of way and structures employees; April 6, signal department employees; April 11, stationary engine and boiler room forces except coal passers; April 13, clerical and station forces; April 15, telegraph and telephone operators; April 18, engine service employees; April 19, marine employees; April 20, train service employees; April 22, train dispatchers, yardmasters and assistants; April 25, shop and signal supervisory forces.

The Situation on Other Roads

The Central of New Jersey has announced that it will hold conferences with its unskilled laborers on March 24 and with its clerks, station employees, mechanics and other skilled laborers other than train and engine service employees on March 25. At these conferences the management will endeavor to arrive at an agreement with the men with regard to reductions in wage rates which have been announced to take effect on April 16.

The Delaware, Lackawanna & Western, which has announced a reduction in the wages of unskilled labor, marine department employees, clerks, station employees, mechanics and other skilled laborers excepting train and engine service employees, to take effect April 16, has held conferences with the unskilled laborers and the marine department employees. No agreement has been reached with the representatives of unskilled labor and the negotiations with the marine department employees are still under way. The dates for the con-

ferences with the other employees have not been announced as yet.

The Erie which held conferences with various classes of skilled and unskilled employees at Hornell, N. Y., on March 17 and 18, was not able to arrive at an agreement with the men regarding wage reductions and the management is considering asking the Labor Board to decide the controversy. The company is now conferring with its marine employees.

The Nashville, Chattanooga & St. Louis has announced that on April 16 a decrease in wage rates of certain unskilled and semi-skilled classes of employees will be put into effect. Conferences with the employees will be held in the meantime.

The New York Central, which was unable to reach an agreement in its conferences with its unskilled employees, has petitioned the Labor Board to put into effect the reductions in wages asked. It is understood that some of the marine employees of this company will accept a reduction and conferences are still in progress.

The Central of Georgia has already held conferences with its unskilled employees but as yet no agreement has been reached.

Conferences with unskilled laborers on the Lehigh Valley, having failed to produce terms acceptable to the employees and the management, the company is considering submitting its case to the Labor Board.

It was announced on March 22 that the employees of the Boston, Revere Beach & Lynn have agreed to a reduction in their wages averaging about 12 per cent.

The Bangor & Aroostook has announced that on April 16 it will put into effect reductions in the rates of pay of foremen, clerks, station and yard employees, office boys and other office assistants, maintenance of way and structures department labor, both skilled and unskilled, shop craftsmen and laborers, dining car and restaurant workers, stationary enginemen and firemen, coal passers and all other employees whose wages were adjusted under decision No. 5 of the Labor Board. Conferences with the employees affected will be arranged later.

Conditions Improve on A. B. & A.

The Atlanta, Birmingham & Atlantic has resumed local passenger and freight service on all parts of its line, according to an announcement made on March 21. The company expects to resume the operation of through freight and passenger trains shortly. The organized employees of this company went out on a strike on March 5 following a reduction in wages by the receiver acting under orders of the court. The places of the striking employees are being filled as rapidly as possible by new men. The representatives of some of the unions have attacked the scale of salaries of the company's officers and have suggested an investigation by the Interstate Commerce Commission. To this Receiver Bugg replied in part:

> The total payroll of the executive officers, according to the statement, amounts to less than $105,000 a year, and if it should all be cut off, it would pay the deficit for only one month. The total payroll is more than $4,000,000 per year, and less than $105,000 goes to the executive officers, counsel and surgeon.
>
> The total salaries paid amounts to less than 2¾ per cent of the total pay roll. The officers employed and the salaries paid them are small for a railroad of the length and of the difficulty of operation of the A., B. & A. The A., B. & A. meets keen competition everywhere, and its successful operation requires skillful men of much experience, who are willing to devote their entire time, without regard to the number of hours that may be involved in a day's work. None of them draws the line at eight hours per day.
>
> Some of the engineers and conductors are paid, for five and six hours per day, about as much as some of the executive officers are paid, who work from ten to twelve hours per day, and on holidays, besides.
>
> The executive officers have all very cheerfully accepted the proposed reduction. The appeal to the Interstate Commerce Commission strikes me as being for advertising purposes only. At the same time any investigation the Interstate Commerce Commission wishes to make will be welcomed by me.

Representatives of the employees have maintained that the wage reduction, put into effect immediately upon the order of the court, violated a section of the Newlands Act of July 15, 1913, regarding receiverships which requires a 20-day notice and a hearing prior to a reduction in wages. It is understood that the federal Department of Justice will endeavor to uphold the Act in this regard.

Missouri & North Arkansas Suspends Services

The Missouri & North Arkansas has been compelled to suspend service, according to a statement by C. A. Phelan, receiver and general manager, because "the depredations which have been committed would endanger the lives of passengers and employees." The statement of Mr. Phelan follows in part:

> The railroad, on receipt of the Labor Board's Decision, advised the Labor Board on February 24 that it was ready to confer with the former employees involved and consider the subject of whether the present wages are just and reasonable as outlined in the Board's decision; and the railroad being aware of the fact that the dispute had been carried to the Labor Board by the representatives of the former employees, assumed that the former employees would abide by the decision of the Labor Board and join the railroad in conference as required by the decision.
>
> An ultimatum from the representatives of the former employees was delivered to the general manager at 5 o'clock p. m., February 25, advising the railroad that unless the wage reduction order was rescinded and the rates of pay in effect prior to February 1, 1921, restored that the men employed on the Missouri & North Arkansas in the capacity of engineers, firemen, hostlers, conductors, trainmen, yardmen, agents, telegraphers, train dispatchers and maintenance of way men would withdraw from the service at 3 o'clock a. m. February 26, 1921, or ten hours after presentation of the ultimatum to the railroad.
>
> When the former employees quit the service of the railroad at 3 o'clock on the morning of February 26 as they said they would do unless the wage reduction order was rescinded, new men were employed to fill the places of those who had quit and little difficulty was encountered in obtaining experienced and qualified railroad men. The new employees are entirely satisfied with the reduced scale of wages and it has been clearly demonstrated that the new organization can operate the railroad efficiently and take care of public convenience and necessity; but since February 26 we have encountered lawlessness and interference in the way of intimidations and threats against the new employees, the new employees and their families have been insulted by former employees, the new employees have been assaulted by former employees, and obstructions have been placed on the railroad track and trains bridges have been burned. . . .
>
> The people and the authorities along this railroad are familiar with conditions and while the railroad has used every means at its command to protect trains and property, that has been impossible. To attempt to continue train operation in the face of the depredations which have been committed would endanger the lives of passengers and employees, and until federal and state authorities provide adequate protection to trains and property of this railroad between Neosho, Missouri, and Helena, Arkansas, we must in the interest of safety discontinue the operation of this railroad.

Conference with "Big Four" to Be Reported to Committee

T. De Witt Cuyler, chairman of the Association of Railway Executives, announced on March 23 that the result of his conferences with the leaders of the train and engine brotherhoods would be reported to the standing committee of the Association at its next meeting. These conferences were held in Philadelphia on March 14. Mr. Cuyler said further that in his opinion the slump in traffic which has so seriously affected the earnings of the railroads has reached the bottom and that a gradual improvement may be expected from now on. This prospective improvement in traffic, however, will probably not be sufficient to offset the deficits already accrued and readjustments in wage rates and other economies will be necessary, he added.

General News Department

The Atlanta Passenger Traffic Club, the activities of which were suspended during government operation of the railroads, was reorganized at a meeting in the Healy building, Atlanta, on Tuesday evening, March 15, with a membership of 144. Joseph P. Billups, general passenger agent of the Atlanta & West Point, was elected president of the club, and George F. Grafton secretary. Meetings will be held once a month.

Eastern railroad executives, Daniel Willard of the Baltimore & Ohio, F. D. Underwood of the Erie, A. T. Dice of the Philadelphia & Reading, A. H. Smith of the New York Central and Elisha Lee of the Pennsylvania, had a long conference with Chairman Clark and other members of the Interstate Commerce Commission at Washington on March 24. It was stated that the possibility of operating economies was under discussion.

Five passengers were killed from suffocation by gas, smoke, and other causes not known, when a Pullman car on train No. 115, on the Denver & Rio Grande, caught fire, enroute, on the morning of March 15. The train left Denver at 7:10 p. m. and picked up the sleeper at Pueblo, Col., for Alamosa, N. M. The fire was discovered at the head end of the car as the train neared Walsenburg, Col., about 1:30 a. m. Among the dead was F. S. Steelman, traveling passenger agent of the Missouri Pacific.

Two masked men held up and robbed passengers in the three rear sleepers on the Texas Special, northbound, on the Missouri, Kansas & Texas, between Chockie and McAlester, Oklahoma, about nine o'clock on the night of March 22. The robbers boarded the train at Dennison, Texas, and proceeded to line up the passengers and rifle their pockets, systematically locking each coach when they had finished with the passengers in it. When the train reached McAlester the robbers stopped it and made their escape with approximately $2,000.

The Tax Bureau of New York State estimates that the State income tax yield for 1920 from railroad employees, who were exempt from payment of tax in 1919 on account of government operation of the railroads will amount to $1,000,000. Careful estimates place the total number of railroad employees in New York State during 1920 at over 130,000. The railroads were not turned back to private ownership until March 1, 1920, but the additional revenue is expected from the remaining 10 months. An examination of Federal income tax returns shows that hundreds of thousands of persons are paying federal taxes for the first time and a large percentage in New York State are railroad men. The largest increases in the number of employees on New York railroads took place among machinists, boilermakers, blacksmiths, electricians, air-brake men, car inspectors, car repairers, helpers and apprentices, hostlers and enginehouse men.

Rock Island War Gardens Continued

A total of 1,078 acres of ground were leased for "Right-of-Way Gardens" by employees on 15 divisions of the Chicago, Rock Island & Pacific during 1920, the individual lease averaging 2.65 acres. This plan has been continued on the Rock Island despite the cessation of war pressure which created the war garden plan of food production. While no data are obtainable as to the value of the products raised, it ran into thousands of dollars and is estimated at half a million for the whole system. This amount of money does not represent produce alone, for many of the lessees went in for hog and chicken raising, while one employee had a record yield of hay.

Of the divisions reporting, the St. Louis division heads the list in the matter of leases and acreage, with 136 leases for a total of 260 acres; the Indian Territory division, which comes second, had 41 leases with a total of 225 acres. That the acreage was well distributed is shown by the fact that the Chicago Terminal division had a total of 2 leases and 1 acre cultivated.

Railway Returns for January

Later returns of the railroads to the Interstate Commerce Commission for January show a slightly better result than on the earlier returns. One hundred and eighty-two Class I roads, operating 228,000 miles, had a net operating income of $142,000 as compared with $59,593,000 in January, 1920. The returns for 166 roads had shown a deficit of $1,289,000. The 182 roads had freight revenues of $318,000,000, an increase of 4.3 per cent as compared with January, 1920, and passenger revenues of $104,000,000, an increase of 14.7 per cent. The total operating revenues were $461,000,000, a decrease of 6.2 per cent, while the total operating expenses, $432,000,000, represented an increase of 6½ per cent.

Certificates Issued for Railroad Guaranty

The Interstate Commerce Commission has issued additional certificates since those reported in last week's issue for partial payments to railroads on account of their guaranty for the six months following the period of federal control in accordance with the provisions of the Winslow law as follows:

		Previously advanced
Boston & Maine	$6,500,000	$4,000,000
Baltimore & Ohio	6,400,000	14,000,000
Delaware, Lackawanna & Western	2,000,000	6.569,500
Alabama, Tennessee & Northern	40,000	.....
Atchison, Topeka & Santa Fe	5,425,000	.....
Central New York Southern	27,000	.....
Gulf, Colorado & Santa Fe	1,575,000	.....
Minneapolis & St. Louis	100,000	2,250,000
Maine Central	300,000	1,550,000

The certificates which had been paid by the Treasury Department up to March 22 under the Winslow law, amounted to $64,719,990.

Compensation of Employees

The Interstate Commerce Commission has issued a summary of statistics covering employees and their service and compensation for Class I roads for the quarter ending June 30, 1920. This statement indicates the conditions that prevailed before the increase in wages awarded by the Railroad Labor Board on July 20, 1920. The award was retroactive to May 1 but the carriers were instructed in rendering returns not to include any of the back pay for May and June resulting from the decision. The number of employees in service at the middle of the month was 1,952,446 for April, 2,005,483 for May and 2,056,381 for June, or an average of 2,004,760. The total compensation for the quarter was $801,063,938. For the first quarter of 1920 the average number of employees in service was 1,993,524 and the total compensation was $795,616,330.

The report gives some indication of the number of yard employees that were out of service during the strikes which were at their height in April. The average number of yard engineers during the first quarter of 1920 was 23,545. During April the number was 20,805 and by June it had increased to 22,471. The average number of yard firemen and helpers during the first quarter was 23,821, for April it was 20,771 and by June it had increased to 22,746. The number of yard conductors or foremen for the first quarter was 23,146, for April it was 17,294 and for June it was 20,562. The number of yard brakemen (switchmen or helpers) during the first quarter was 56,767, for April it was 42,368 and for June it was 51,573.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JANUARY, 1921

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses					Operating ratio.	Net from railway operation.	Operating income (or loss).	Net after rentals.	Increase (or decr.) comp. with last year.
		Freight.	Passenger.	Total (inc. misc.)	Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.					
Alabama & Vicksburg	141	$231,448	$69,473	$318,382	$64,222	$82,656	$8,551	$139,507	$11,220	$308,919	96.72	$9,462	—$5,977	$3,332	—$65,257
Vicksburg, Shreveport & Pacific	171	258,482	93,302	373,582	52,285	104,691	9,852	164,678	14,531	349,440	93.54	24,142	7,377	—4,546	—63,696
Ann Arbor	293	374,015	53,471	447,345	52,734	112,916	9,292	224,831	15,677	415,462	92.87	31,883	14,380	—10,563	—71,553
Atchison, Topeka & Santa Fe	8,828	9,495,359	4,750,135	15,356,003	2,358,215	4,934,956	266,417	6,517,756	376,572	14,459,482	94.16	896,522	158,993	27,856	—7,168,391
Atlanta & West Point	93	93,315	111,658	231,635	32,439	45,714	8,148	97,585	11,356	199,914	86.31	31,721	16,453	11,314	—53,285
Western of Alabama	133	97,324	100,030	215,110	32,248	55,822	7,536	93,587	9,855	202,638	94.20	12,472	3,831	10,705	—71,173
Atlantic Coast Line	4,889	3,871,753	2,121,866	6,451,142	913,359	1,346,581	114,007	3,198,497	147,489	5,766,909	89.38	684,234	433,058	340,790	—1,022,092
Charleston & Western Carolina	342	188,078	49,708	254,485	62,682	67,985	7,624	152,522	7,360	298,173	117.17	—43,688	—53,697	—58,323	—18,526
Baltimore & Ohio	5,155	14,264,607	2,639,376	17,856,152	1,693,959	4,470,620	267,877	8,830,948	562,987	15,948,736	89.32	1,907,415	1,280,008	905,810	53,626
Baltimore & Ohio Chicago Term	90	.....	.....	208,129	20,262	35,694	2,142	158,785	20,340	241,010	115.80	—32,882	—65,086	27,098	—10,011
Staten Island Rapid Transit	23	82,589	86,504	185,020	40,379	33,140	1,673	135,603	13,180	223,974	126.46	—38,954	—50,976	—64,206	—45,092
Bangor & Aroostook	658	597,244	85,113	706,173	144,174	178,086	3,248	285,790	20,119	637,013	90.21	69,159	30,155	59,474	—75,233
Belt Ry. Co. of Chicago	31	.....	.....	456,797	31,643	69,636	1,340	291,961	11,651	406,231	88.93	50,565	25,798	133,328	—3,501
Bessemer & Lake Erie	225	937,882	48,437	1,010,527	111,928	452,650	15,029	423,417	29,287	1,040,384	102.96	—29,858	—46,388	49,654	—87,436
Bingham & Garfield	35	20,433	1,323	23,512	10,724	5,954	2,684	13,124	4,187	36,822	156.61	—13,310	—17,383	—1,039	—38,539
Boston & Maine	2,300	3,733,564	1,893,788	6,120,263	1,196,300	1,600,767	59,258	4,011,341	312,125	7,208,312	117.78	—1,088,049	—1,341,012	—1,549,901	—1,392,852
Brooklyn Eastern District Terminal	9	76,343	.....	86,466	4,891	13,863	442	42,501	7,782	69,479	80.35	16,987	10,743	10,743	72,397
Buffalo & Susquehanna R. R. Corp	253	216,227	8,723	227,547	41,709	117,122	3,271	90,525	10,875	263,502	115.80	—35,955	—40,405	17,598	23,192
Canadian Pacific Lines in Maine	233	297,789	67,925	382,847	33,335	56,142	3,795	205,446	4,337	303,056	79.16	79,791	64,791	48,995	85,489
Carolina, Clinchfield & Ohio	291	597,132	48,802	663,044	96,092	179,689	24,227	225,044	23,259	548,080	82.66	114,964	84,897	201,365	35,477
Central of Georgia	1,924	1,054,791	562,767	1,788,910	315,678	402,057	62,611	942,268	81,857	1,810,498	101.21	—21,587	—104,680	—80,592	—563,211
Central of New Jersey	686	3,290,854	690,719	4,204,671	395,141	1,363,476	31,450	2,044,297	132,779	3,982,751	94.72	221,920	—353	101,084	424,271
Central Vermont	413	329,204	110,807	467,006	66,051	157,908	12,145	376,809	16,559	631,021	135.10	—164,015	—184,916	—176,357	—103,979
Chesapeake & Ohio	2,541	5,712,603	1,040,762	7,126,098	871,374	2,118,160	70,782	3,139,108	164,750	6,389,593	89.66	736,506	504,619	491,736	—506,830
Chicago & Alton	1,050	1,835,904	605,408	2,600,000	280,777	761,910	53,624	1,251,358	66,512	2,420,659	93.10	179,341	119,039	—35,232	—240,372
Chicago & Eastern Illinois	1,130	1,903,002	500,106	2,553,942	284,127	925,799	37,333	1,205,629	74,861	2,542,740	99.56	11,202	—74,097	46,980	—782,066
Chicago & North Western	8,402	7,606,616	3,087,419	11,789,596	1,371,594	3,578,055	178,615	6,554,538	400,726	12,186,824	103.37	—397,228	—1,179,203	—1,279,561	—1,983,677
Chicago Great Western	1,496	1,427,732	467,630	2,036,297	200,623	534,539	71,452	1,006,419	69,725	1,900,161	93.31	136,135	54,348	1,016	—301,366
Chicago, Indianapolis & Louisville	654	853,151	277,247	1,229,795	107,872	349,620	32,352	573,874	37,196	1,117,824	90.90	111,971	65,654	—28,653	—187,040
Chicago Junction	12	.....	.....	423,560	60,059	48,332	227	232,115	13,179	353,912	83.56	69,648	66,145	149,550	163,529
Chicago, Milwaukee & St. Paul	10,605	8,012,212	2,372,313	11,587,656	1,207,625	3,584,752	161,846	6,321,114	418,039	11,749,407	101.40	—161,751	—882,485	—1,214,004	—2,251,025
Chicago, Peoria & St. Louis	247	146,160	30,052	183,939	29,162	72,171	5,432	127,059	11,535	245,359	133.39	—61,419	—68,623	—64,293	—40,944
Chicago, Rock Island & Pacific	7,662	7,026,659	2,621,482	10,440,227	1,640,358	2,427,075	177,827	5,250,207	273,798	9,815,772	94.02	624,455	165,785	—156,462	—2,263,973
Chicago, Rock Island & Gulf	461	452,346	120,905	603,879	101,634	112,410	13,977	334,473	17,186	581,313	96.26	22,566	8,598	—5,050	—225,841
Chicago, St. Paul, Minn. & Omaha	1,749	1,645,514	628,927	2,400,185	207,453	569,449	35,419	1,320,700	83,486	2,229,103	92.87	171,081	34,691	19,847	—659,972
Chicago, Terre Haute & Southeastern	374	425,392	28,265	465,156	75,420	201,004	6,646	223,251	13,861	522,160	112.25	—57,004	—76,568	—68,283	—135,329
Cincinnati, Indianapolis & Western	321	217,080	63,014	296,891	40,818	83,797	13,956	160,164	29,187	329,334	110.93	—32,443	—50,063	—45,940	—34,579
Columbus & Greenville	278	121,341	40,328	170,828	43,495	25,159	2,901	86,304	6,380	164,238	96.14	6,589	—6,661	—39,912	—51,168
Copper Range	141	60,732	13,897	78,473	18,004	15,041	1,991	38,764	3,360	77,159	98.33	1,313	—5,187	—5,646	8,171
Delaware & Hudson	880	3,659,860	317,424	4,126,239	412,657	1,219,258	37,297	1,904,355	165,129	3,761,477	91.16	364,762	285,262	338,095	564,353
Delaware, Lackawanna & Western	997	5,119,719	1,175,113	6,935,047	571,101	1,680,438	105,290	3,424,286	180,440	6,021,069	86.82	913,978	533,845	571,569	379,327
Denver & Rio Grande	2,585	2,287,025	525,821	2,981,378	310,307	863,008	46,543	1,087,870	89,455	2,446,507	82.06	534,871	400,708	447,064	—573,412
Denver & Salt Lake	255	173,726	20,513	201,970	47,343	85,356	1,202	117,147	7,002	258,051	127.77	—56,081	—64,185	—66,360	69,338
Detroit & Mackinac	374	74,445	37,354	120,284	20,706	54,461	2,473	74,099	7,637	159,344	132.47	—39,060	—48,450	—35,229	15,815
Detroit & Toledo Shore Line	61	205,310	.....	209,384	15,262	27,293	4,063	44,031	6,102	96,751	46.21	112,633	102,633	76,254	48,151
Detroit, Toledo & Ironton	454	221,185	14,177	248,425	103,590	80,932	7,423	159,226	18,840	370,006	148.94	—121,581	—131,567	—193,519	—119,916
Duluth & Iron Range	291	140,414	33,477	198,651	68,081	111,333	1,009	187,660	20,819	389,189	195.92	—190,539	—202,723	—210,037	—84,139
Duluth, Missabe & Northern	406	127,855	59,944	217,143	116,632	216,372	2,045	184,976	20,990	542,931	250.03	—325,788	—340,420	—343,625	—31,956
Duluth, Winnipeg & Pacific	178	274,351	43,989	327,093	27,537	36,892	5,483	154,153	16,593	240,658	73.56	86,435	70,035	69,226	50,370
Elgin, Joliet & Eastern	837	2,346,336	4	2,602,620	191,948	530,158	14,481	852,880	45,117	1,634,342	62.81	968,278	900,538	699,019	534,993
El Paso & Southwestern	1,027	749,922	258,958	1,074,230	290,316	276,121	29,864	355,720	56,661	1,018,462	94.81	55,768	—48,690	—43,989	—492,573
Erie	1,989	6,620,163	1,197,527	8,399,622	895,812	2,847,571	130,887	4,659,347	323,391	8,904,681	106.01	—505,060	—796,149	—256,385	237,330
Chicago & Erie	269	752,837	75,327	875,631	119,249	185,208	18,858	651,359	43,360	1,017,278	116.18	—141,648	—185,401	—522,994	—402,091
New Jersey & New York	47	11,308	99,626	114,812	9,642	21,005	934	75,994	2,220	109,795	95.63	5,017	—8,718	—19,320	—11,465
New York, Susquehanna & Western	135	325,996	64,812	435,828	61,156	65,450	2,989	280,620	8,497	418,712	96.07	17,117	2,100	22,562	144,009
Florida East Coast	764	864,876	540,541	1,549,447	212,701	231,396	28,293	569,117	28,991	1,082,165	69.84	467,281	419,714	375,703	30,394
Fonda, Johnstown & Gloversville	88	30,508	78,724	112,713	13,928	11,518	492	50,098	7,438	83,474	74.06	29,240	23,665	22,101	—10,959
Fort Smith & Western	253	141,638	30,488	185,070	46,306	56,035	5,523	77,124	8,281	195,525	105.65	—10,454	—16,164	—17,231	7,046
Georgia	328	256,993	137,939	428,211	67,500	123,449	21,285	283,945	21,625	518,003	120.97	—89,792	—95,792	—82,109	—37,294
Georgia & Florida	405	72,076	21,321	101,077	36,947	28,251	7,321	62,503	9,831	144,853	143.31	—43,777	—51,565	—53,882	18,753

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JANUARY, 1921—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Operating income (or loss).	Net after rentals.	Increase (or decr.) comp. with last year.
					Maintenance of—										
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Grand Trunk System—Atlantic & St. Law.	166	$315,077	$43,037	$375,975	$36,333	$83,549	$2,685	$227,174	$10,566	$359,328	95.73	$16,645	—$2,559	—$81,187	$48,211
Great Northern	8,170	4,225,054	1,378,317	6,279,240	939,022	1,833,673	136,768	3,600,395	253,156	6,737,224	107.29	—457,984	—1,524,728	—1,555,177	—3,076,381
Green Bay & Western	252	92,963	21,772	122,491	14,148	32,309	2,095	50,855	5,130	104,618	85.33	17,973	10,973	8,594	2,434
Gulf Coast Lines	920	915,765	257,538	1,222,624	241,844	200,415	30,094	373,294	43,740	886,946	72.5	335,678	301,983	257,544	136,486
Gulf & Ship Island	307	167,044	55,078	236,933	45,506	51,250	9,174	95,993	14,289	216,603	91.42	20,321	—560	12,050	—10,132
Hocking Valley	350	788,046	115,172	952,983	149,173	548,176	11,236	449,561	38,020	1,195,284	125.43	—242,301	—328,816	—189,155	—392,921
Illinois Central	4,799	9,781,760	2,370,567	12,878,199	1,427,580	2,636,098	152,858	5,549,769	306,490	10,150,439	78.82	2,727,760	1,889,529	2,053,528	—398,848
Yazoo & Mississippi Valley	1,381	1,347,121	434,482	1,881,184	311,110	330,304	32,005	917,442	71,567	1,665,763	88.55	215,421	110,051	110,136	—215,173
International & Great Northern	1,159	1,277,112	314,446	1,751,348	221,931	435,160	25,477	1,039,259	53,727	1,754,355	100.17	—3,007	—33,087	—166,721	—410,776
Kansas City, Mexico & Orient	272	108,292	12,692	128,152	34,689	54,484	4,911	81,447	13,490	189,021	147.50	—60,869	—68,909	—69,140	—20,880
Kansas City, Mexico & Orient of Texas	465	134,904	18,707	159,315	53,957	34,884	5,424	92,399	13,420	200,083	125.59	—40,768	—46,918	—46,493	—15,335
Kansas City Southern	779	1,433,245	216,397	1,766,339	188,908	277,581	37,881	709,977	72,893	1,283,579	72.67	482,760	404,896	403,408	142,635
Texarkana & Fort Smith	93	178,913	20,201	212,476	21,443	17,053	3,979	74,166	8,252	124,732	58.70	87,744	80,391	38,208	—5,128
Kansas City Terminal	27	.....	.....	136,688	11,303	25,276	.....	63,376	2,622	105,611	77.27	31,077	4,567	235,177	97,669
Kansas, Oklahoma & Gulf	329	243,508	24,755	278,721	64,443	52,349	4,582	117,709	11,147	251,522	90.24	27,198	18,687	—6,609	117,054
Lake Terminal	13	.....	.....	151,754	19,600	27,229	.....	93,955	67	140,851	92.82	10,903	4,880	2,081	26042
Lehigh & Hudson River	96	243,902	4,407	257,045	34,267	57,702	2,323	137,121	8,628	240,041	93.39	17,005	8,405	—17,266	6,500
Lehigh & New England	237	254,802	2,161	271,535	34,777	83,637	5,798	142,638	16,967	283,714	104.49	—12,179	—27,632	13,959	—71,777
Lehigh Valley	1,437	4,970,573	627,940	6,036,114	680,317	2,185,350	101,264	3,159,350	152,098	6,301,952	104.40	—265,837	—491,307	—452,542	—47,056
Los Angeles & Salt Lake	1,168	972,648	588,316	1,706,579	392,911	363,373	68,186	706,203	38,136	1,620,170	94.94	86,409	—15,964	—78,140	—445,954
Louisiana & Arkansas	302	309,032	40,581	354,699	69,699	62,527	6,270	132,624	9,504	280,609	79.11	74,089	56,005	46,047	—49,950
Louisville & Nashville	5,043	7,179,866	2,396,317	10,142,182	1,491,137	3,306,293	223,586	4,954,082	273,658	10,279,332	101.35	—137,151	—440,210	—587,421	—1,695,424
Louisville, Henderson & St. Louis	199	150,721	66,781	234,219	53,773	40,077	6,768	97,163	9,204	206,984	88.37	27,235	19,858	4,024	—37,359
Maine Central	1,215	1,491,990	374,503	1,968,969	578,677	983,782	16,760	1,217,518	66,715	2,865,177	145.52	—896,208	—1,008,027	—1,050,060	—983,063
Midland Valley	388	318,207	99,010	435,405	110,754	83,046	5,323	159,345	39,759	398,228	91.46	37,177	28,991	21,048	20,386
Minneapolis & St. Louis	1,646	1,193,068	225,516	1,477,894	145,127	376,515	25,343	800,334	47,161	1,394,612	94.37	83,282	10,255	—6,185	—268,103
Missouri, Kansas & Texas	1,715	1,964,530	739,994	2,925,832	342,001	933,549	42,435	1,142,481	106,436	2,565,218	87.67	360,614	250,702	408,601	—350,133
Wichita Falls & Northwestern	328	179,954	34,560	224,377	28,061	34,972	1,324	89,186	9,010	162,546	72.44	61,831	50,901	36,478	143,196
Missouri Pacific	7,300	6,577,838	1,862,572	9,552,340	1,464,470	2,285,390	185,624	4,582,103	281,002	8,832,230	92.46	720,110	449,351	340,627	—1,626,677
Nashville, Chattanooga & St. Louis	1,247	1,087,942	505,934	1,756,329	232,694	484,878	78,981	915,993	58,985	1,778,197	101.25	—21,869	—71,922	5,492	—363,116
New Orleans Great Northern	274	166,261	45,005	220,610	37,157	38,108	4,879	98,659	10,415	189,660	85.96	30,950	15,833	20,991	13,158
New York Central	.....	17,123,552	7,674,846	27,360,588	3,143,625	7,389,611	325,379	13,797,901	948,818	26,003,294	95.04	1,357,294	—254,633	—256,837	—6,350,364
Cleveland, Cincinnati, Chic. & St. Louis	2,424	4,905,744	1,532,906	6,960,692	828,035	1,318,057	120,285	3,367,415	178,897	5,866,106	84.27	1,094,586	778,948	444,647	—1,272,989
Indiana Harbor Belt	120	.....	.....	784,739	148,361	140,630	3,319	545,826	27,644	865,828	110.33	—81,089	—91,777	—204,572	113,428
Kanawha & Michigan	177	289,436	65,782	365,987	74,151	182,969	4,367	163,704	6,724	431,915	118.01	—65,928	—101,584	—39,159	—35,152
Lake Erie & Western	738	679,577	66,339	782,645	164,747	302,777	22,141	399,815	30,938	920,262	117.58	—137,617	—182,330	—192,310	—271,542
Michigan Central	1,865	3,609,962	2,007,474	6,128,497	751,994	1,405,564	111,928	2,767,441	168,692	5,286,350	86.26	842,147	616,791	507,067	—311,519
Pittsburgh & Lake Erie	224	2,434,782	310,903	2,966,834	464,073	928,340	25,865	1,163,475	85,250	2,668,677	89.94	298,156	73,056	355,291	69,707
Toledo & Ohio Central	502	779,136	79,259	887,475	148,721	275,552	12,741	460,856	36,679	938,172	105.71	—50,697	—106,553	—94,331	51,445
New York, Chicago & St. Louis	574	2,113,761	100,519	2,265,038	189,318	287,680	54,014	1,094,946	76,309	1,706,692	75.35	558,345	454,330	470,462	114,568
New York, New Haven & Hartford	1,985	3,481,674	4,227,969	8,656,046	1,254,191	2,596,510	56,507	5,348,566	362,218	9,800,991	113.23	—1,144,944	—1,542,837	—1,795,841	—2,390,455
Central New England	301	600,422	27,666	660,614	102,317	131,654	3,844	294,860	16,775	549,444	83.17	111,169	90,281	40,013	293,714
New York, Ontario & Western	569	670,419	141,530	959,527	132,861	265,837	16,160	548,923	34,771	998,552	104.07	—39,025	—74,550	—65,556	139,603
Norfolk Southern	944	358,726	139,472	537,687	97,020	86,623	24,128	325,118	34,885	568,042	105.65	—30,355	—61,029	—56,462	—204,849
Northern Pacific	6,655	4,432,411	1,435,242	6,460,094	833,684	1,738,738	118,322	3,232,619	295,023	6,320,394	97.84	139,700	—632,179	—432,316	—2,479,563
Minnesota & International	194	89,545	42,169	139,479	10,238	19,538	1,132	73,692	4,288	108,891	78.07	30,588	23,614	12,662	10,107
Pennsylvania	7,358	29,000,695	11,975,673	44,640,210	4,649,990	13,779,696	497,052	22,605,803	1,166,480	43,476,566	97.39	1,163,644	—525,759	—1,153,667	—2,046,208
Baltimore, Chesapeake & Atlantic	87	57,489	27,481	88,947	13,297	49,567	1,532	66,644	4,076	135,116	151.91	—46,170	—49,970	—51,218	9,092
Cincinnati, Lebanon & Northern	76	74,200	8,896	86,215	18,433	20,671	1,763	68,038	4,684	113,573	131.73	—27,358	—36,019	—37,283	7,641
Grand Rapids & Indiana	569	507,300	185,283	754,653	79,388	195,120	13,934	445,293	28,249	762,640	101.06	—7,986	—47,416	—59,001	146,342
Maryland, Delaware & Virginia	82	47,727	22,229	72,416	9,155	12,734	896	62,596	2,453	87,835	121.29	—15,418	—17,521	—17,269	—26,126
New York, Philadelphia & Norfolk	121	417,401	122,709	587,949	52,569	127,266	8,466	333,495	12,920	545,444	92.77	42,505	18,695	11,043	91,990
Pittsburgh, Cincinnati, Chic. & St. Louis	2,383	6,729,300	2,229,227	9,782,489	941,865	3,016,897	141,546	4,874,757	264,741	9,299,131	95.06	483,358	75,026	—166,251	1,458,551
West Jersey & Seashore	359	303,564	432,464	839,097	171,223	206,651	11,322	554,103	21,166	975,836	116.06	—134,739	—189,922	—201,034	—177,643
Peoria & Pekin Union	19	14,174	3,061	173,688	17,619	41,132	54	111,825	6,432	177,064	101.94	—3,376	—14,376	4,104	9,749
Pere Marquette	2,238	1,738,684	469,751	2,404,553	323,628	648,703	45,765	1,468,856	124,008	2,615,078	108.76	—210,524	—292,348	—290,145	—273,156
Philadelphia & Reading	1,126	6,544,867	1,007,904	7,873,621	759,742	2,487,273	55,443	3,754,630	185,188	7,266,709	92.29	606,912	365,672	177,553	—11,098
Atlantic City	177	75,290	129,918	217,146	74,479	43,602	2,651	211,739	1,405	333,966	153.80	—116,820	—134,705	—156,592	—141,779
Perkiomen	41	136,903	8,505	149,682	5,776	4,187	15	39,859	479	50,341	33.63	99,342	96,198	91,774	54,443
Port Reading	21	194,642	.....	260,181	15,869	11,486	18	108,623	362	136,357	52.41	123,823	110,660	36,721	31,552
Pittsburgh & Shawmut	102	135,894	7,379	145,884	30,846	43,638	3,767	59,151	8,021	145,423	99.68	461	276	42,848	—831
Pittsburgh & West Virginia	63	154,735	12,728	199,653	39,779	61,505	1,832	73,501	8,451	196,935	98.64	2,718	—14,654	—30,377	249
Pittsburgh, Shawmut & Northern	209	99,679	8,554	109,729	33,158	62,314	1,303	59,643	6,774	163,196	148.73	—53,467	—55,699	—20,333	—25,384
Richmond, Fredericksburg & Potomac	117	425,642	376,614	895,499	150,204	148,564	7,970	413,796	29,072	749,867	83.74	145,632	106,169	63,813	—293,932
Rutland	415	315,641	128,444	511,561	93,344	119,801	7,816	261,305	16,229	500,399	97.82	11,162	—12,652	9,970	—65,466
St. Louis Southwestern	968	1,278,275	181,187	1,519,646	212,348	258,344	49,467	473,172	56,476	1,057,574	69.59	462,073	416,949	374,291	—119,774
St. Louis Southwestern of Texas	807	473,477	116,451	632,768	157,050	198,347	20,980	364,393	36,600	777,886	122.93	—145,117	—169,130	—146,839	39,255
San Antonio, Uvalde & Gulf	317	52,058	28,694	94,113	13,728	18,589	2,203	46,107	6,757	87,383	92.85	6,729	3,904	—72,236	61,491

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JANUARY, 1921—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses					Operating ratio.	Net from railway operation.	Operating income (or loss).	Net after rentals.	Increase (or decr.) comp. with last year.
		Freight.	Passenger.	Total (inc. misc.)	Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.				
Seaboard Air Line	3,563	$2,670,961	$1,235,847	$4,335,146	$485,799	$555,123	$124,513	$2,109,422	$148,648	$3,472,362	80.10	$862,784	$712,159	$556,386	—$288,139
Southern Railway	6,971	6,770,586	2,966,719	10,692,929	1,964,801	2,390,139	231,867	5,616,253	364,606	10,670,271	99.79	22,658	—360,828	—626,055	—3,105,760
Alabama Great Southern	313	611,828	192,282	872,062	141,918	213,664	23,684	468,342	27,897	883,276	101.29	—11,214	—35,360	—71,476	—279,695
Cin., New Orleans & Tex. Pacific	338	1,060,761	410,990	1,564,859	231,781	487,197	31,627	744,080	43,988	1,553,852	99.30	11,007	—35,564	—101,778	—512,854
Georgia Southern & Florida	402	278,599	106,177	429,076	100,082	90,198	8,995	249,335	13,721	466,242	108.66	—37,165	—54,265	—85,876	—210,209
Mobile & Ohio	1,165	1,476,733	185,605	1,743,996	225,676	501,580	43,282	777,258	55,651	1,694,796	92.02	139,199	78,753	105,143	—90,815
New Orleans & Northeastern	207	392,392	99,863	558,227	106,914	151,094	13,321	305,032	19,344	601,328	107.72	—43,101	—82,514	—108,493	—233,641
Northern Alabama	110	91,586	17,442	111,682	15,999	7,618	2,019	61,562	3,267	90,466	81.00	21,216	16,011	—15,904	—35,066
Southern Pacific	7,110	8,586,326	4,536,331	14,688,080	2,133,858	2,876,176	227,134	6,504,629	446,339	12,502,097	85.117	2,185,982	1,271,587	1,231,524	—2,079,089
Galveston, Harrisburg & S. Antonio	1,381	1,949,265	495,676	2,617,565	330,448	509,753	48,106	1,005,957	85,723	1,997,354	76.30	620,311	576,689	409,219	—170,622
Houston & Texas Central	915	780,735	247,877	1,106,209	218,717	192,873	21,987	473,860	33,347	940,519	85.02	165,690	121,673	92,242	—21,243
Houston, East & West Texas	190	179,397	55,348	251,226	39,302	41,154	3,836	145,375	8,581	238,247	45.79	112,979	4,844	—16,517	—21,243
Louisiana Western	207	258,730	114,616	400,056	55,817	80,848	11,986	107,823	16,982	278,105	69.36	122,850	99,381	95,454	—88,658
Morgan's L. & T. R. & S. S. Co	400	531,817	183,529	771,996	205,990	220,368	18,294	366,001	30,153	846,357	109.63	—74,360	—119,290	—161,425	—503,008
Texas & New Orleans	469	579,989	173,191	801,281	160,369	248,228	12,100	344,612	25,200	797,115	99.48	4,166	—16,477	—68,260	—174,720
Spokane International	165	85,788	19,971	110,851	14,820	7,634	3,201	39,070	6,596	71,321	64.34	39,530	34,405	28,046	—24,208
Tennessee Central	292	116,089	52,793	182,151	40,184	45,336	4,806	133,049	11,497	234,833	128.92	—52,682	—57,347	—78,199	—103,012
Texas & Pacific	1,946	2,339,535	871,649	3,538,497	542,602	725,135	53,714	1,584,413	106,202	3,044,124	86.03	494,373	366,491	182,175	30,312
Toledo, Peoria & Western	247	91,079	58,579	158,399	31,640	50,647	2,884	104,333	8,416	197,919	124.95	—39,520	—49,520	—38,141	—89,193
Toledo, St. Louis & Western	454	683,353	33,808	755,852	119,316	201,753	19,709	301,051	15,615	657,444	86.98	98,408	67,408	52,073	5,112
Trinity & Brazos Valley	368	217,437	22,345	247,958	57,557	59,659	3,452	121,771	10,471	252,465	101.82	—4,507	—11,206	—25,813	—20,814
Ulster & Delaware	128	43,316	17,542	82,182	15,999	23,957	2,174	67,246	8,491	118,663	144.39	—36,481	—42,732	—43,095	—34,221
Union R. R. of Penna	45			1,010,696	70,990	195,960	285	598,029	9,419	874,683	86.54	136,014	125,348	175,025	215,862
Union Pacific	3,614	5,996,832	1,651,552	8,489,103	877,703	2,318,629	137,451	3,190,266	350,929	7,092,527	83.55	1,396,577	828,002	688,376	—3,705,830
Utah	98	113,181	446	114,379	12,115	40,751	470	30,156	3,695	87,189	76.23	27,190	23,064	25,047	—48,475
Virginian	526	1,522,341	85,569	1,693,135	228,704	379,025	11,627	559,976	34,067	1,216,290	71.84	476,845	382,203	430,918	—33,099
Wabash	2,472	3,513,675	860,960	4,717,017	625,060	1,082,621	110,788	2,476,904	189,142	4,516,146	95.74	200,871	64,365	—145,114	—480,393
Western Maryland	797	1,514,839	101,356	1,701,281	218,632	479,646	26,955	702,321	57,248	1,506,353	88.54	194,929	114,929	236,603	51,228
Western Pacific	1,011	721,665	176,825	951,574	139,904	207,341	29,036	431,442	47,700	870,681	91.50	80,892	13,389	89,855	—337,480
Wheeling & Lake Erie	511	882,021	84,550	1,047,636	145,073	292,372	16,012	554,587	37,026	1,049,511	100.18	—1,874	—82,288	—113,666	—58,262

New York City Votes Daylight Saving

New York City, by vote of its Board of Aldermen, is to set its clocks ahead one hour on April 24 and continue daylight saving until September 25; five months instead of seven months, as in previous years.

The New York, New Haven & Hartford announces that its New York suburban trains, and probably many others, will be run one hour earlier than at present. Other roads will, no doubt, take similar action. The New York State law now allows all cities and towns to adopt local ordinances for daylight saving. Connecticut, in which lie hundreds of miles of the New Haven road's lines, sticks to Eastern Standard time, a law just passed making it virtually out of the question for cities to take independent action.

Charges of Shop Unions Renewed

Five additional organizations of shop employees and the Railway Employees Department of the American Federation of Labor have joined with the International Association of Machinists in the complaint filed with the Interstate Commerce Commission requesting an investigation of railroad car and locomotive repair work. The original complaint was filed January 8, 1921, by W. Jett Lauck, representing William H. Johnston, president of the machinists. The press notice, just issued by way of keeping the subject alive, says that since the filing of the original complaint additional investigations have been made and the employees now claim to be prepared to fully substantiate all the charges made. The union heads who have joined with the Machinists' Association in the complaint, and the organizations which they represent, are as follows: B. M. Jewell, president of the Railway Employees Department, American Federation of Labor; J. J. Hynes, international president of the Amalgamated Sheet Metal Workers' International Alliance; Martin F. Ryan, general president of the Brotherhood of Railway Carmen of America; James P. Noonan, international president of the International Brotherhood of Electrical Workers; J. W. Kline, president of the International Brotherhood of Blacksmiths, Drop Forgers and Helpers of America; J. A. Franklin, president of the International Brotherhood of Boilermakers and Iron Shipbuilders.

Appointments Made and Pending

John J. Esch has been given a recess appointment by President Harding as a member of the Interstate Commerce Commission. This will enable him to begin service on the commission at once, pending his confirmation by the Senate, which was postponed until the opening of the extra session because of the opposition of Senator LaFollette, who asked time to file a minority report on the action of the committee in interstate commerce in recommending confirmation.

There are still two vacancies on the commission to be filled by President Harding's appointment and the claims of a large number of candidates have been urged upon the President. A delegation of Senators and Representatives from the Northwestern states has called upon the President to urge him to appoint a commissioner from that section. It is persistently reported that one of the positions is to be offered to Frank Hagenbarth of Salt Lake City, president of the National Wool Growers' Association. F. I. Cox, an officer of a traveling men's association, has also been prominently mentioned as a candidate.

The resignation of John Barton Payne as director general of railroads in charge of the Railroad Administration was made effective as of March 15, but the President has not yet appointed his successor.

The terms of office of three members of the Railroad Labor Board, H. J. Hunt of the public group, W. L. Park of the railroad group and J. J. Forrester of the labor group, expire next month under the terms of the transportation act and the President is expected to make appointments for these positions for the full term of five years. Under the law the original appointments included one man in each group for one year, one man in each group for two years and one man in each group for three years. The appointments are to be made in the same way as the original appointments, that is, on nominations by the labor organizations and by the railroads in the case of the representatives of those groups.

Traffic News

The Traffic Club of Kalamazoo (Mich.), organized late in 1920, finds itself prosperous and growing. The regular meetings are held on the first and third Thursdays of each month. The officers are: W. C. Thoms (Mich. Cent.), president; L. R. Fulton (Barley Motor Car Company), vice-president; G. J. Bolender (Chamber of Commerce), secretary; A. H. Bock (N. Y. C.), treasurer.

W. K. Vandiver, assistant manager of the Department of Traffic, United States Railroad Administration, has resigned to become traffic manager for the Grain Dealers' National Association, with office in the Gardner building, Toledo, Ohio. Mr. Vandiver had been with the Railroad Administration for about a year, previous to which time he was assistant general freight agent of the Mobile & Ohio.

At a recent meeting of the El Paso, Texas, Traffic Club the following officers were elected: President, N. L. Rankin, traffic manager, Texas & Pacific; vice-presidents, J. D. Neely, traffic manager, Krakauer-Zork Company; W. C. McCormick, assistant general freight and passenger agent, Southern Pacific, and H. D. McGregor, division passenger agent, El Paso & Southwestern; secretary-treasurer, George Deck, district passenger agent, Texas & Pacific.

"Weighing Carload and Less Than Carload Freight" was the subject of the transportation discussion at the Traffic Club of Chicago on March 24. Among the speakers were A. S. Dodge, superintendent Western Weighing Bureau; F. V. Roy, Fairbanks, Morse & Co.; H. A. Foss, Weightmaster, Chicago Board of Trade; J. S. Brown, Chicago Board of Trade; W. J. Womer, Consumers Company; Murray N. Billings, Illinois Steel Company; R. B. Goe, Illinois Central, and C. T. Scribner, Chicago, Burlington & Quincy.

Traffic Director Hardie and Examiner Healey of the Interstate Commerce Commission will next Monday conduct a conference relative to rates on fruits and vegetables, at the Federal building in Dallas, Texas. This conference is called at the request of the Texas commission and the Texas state legislature, to investigate the alleged serious situation of producers of fruits and vegetables in Texas. The conference is to be held between shippers and carriers, and while it relates primarily to the rates to and from Texas and Southwestern points, carriers' and shippers' organizations from other fruit and vegetable producing districts, in particular the Southeast and Florida, will be given an opportunity of making a statement relative to the general situation, if they so desire.

Coal Production Continues to Decline

Production of soft coal during the week ending March 12 dropped below the 7,000,000 ton mark. The total output is estimated at 6,891,000 net tons, according to the weekly bulletin of the Geological Survey, a decrease of 5 per cent below the revised figure for the week preceding. What was last week reported to be a slight recovery is now shown by corrected figures to have been instead a decrease, so that the decline in production since December, 1920, has been unbroken.

Temporary Reduction of Live Stock Rates

A temporary reduction in the rates on stocker and feeder cattle from the ranges in the Southwest to the feeding grounds in Oklahoma, Kansas, Nebraska, Colorado, Wyoming and Montana, from April 15 to July 1 was agreed to by traffic officers of the western railroads at a conference in Washington with representatives of the live stock shippers and Chairman Clark of the Interstate Commerce Commission on March 17. The rates in effect on August 25, 1920, prior to the 35 per cent advance made under Ex Parte 74, will be restored. It was estimated that this reduction would result in a movement of 900,000 head of cattle and was agreed to because of the depressed condition of the live-stock industry and the need for larger shipments of cattle to the regions which have been subject to drouths.

Coal-Car Distribution Rules to Be Investigated

The Interstate Commerce Commission has ordered an investigation of the present car distribution rules in so far as they apply to privately owned coal cars and cars furnished for railroad fuel coal, with a view to prescribing such just and reasonable rule or regulation as may appear to be necessary. The proceeding is assigned for hearing at such times and places as the commission may hereafter direct.

Service Order No. 18, issued on September 28, providing for the assignment of cars for railroad fuel has been vacated and set aside.

Free Tolls Through Panama Canal Proposed

The new Congress which meets in extra session on April 11 is expected to take up at an early date the question of restoring the law providing for free tolls for vessels using the Panama Canal which was repealed early in the Wilson administration. President Harding has expressed himself as being in favor of free tolls and it is commonly predicted that the measure will be passed by Congress. Such a step would greatly increase the competition against the transcontinental railroads which have been comparatively free from water competition during the war period. The transcontinental rail rates have been readjusted in various ways in accordance with the condition of comparative absence of competition; and the stimulus to shipping which would be given by taking off the tolls would doubtless reopen the question of the rail rate adjustment.

Application of Rate Increases to Points Near Regional Border Line

W. V. Hardie, director of traffic of the Interstate Commerce Commission, has issued a notice concerning increases in freight rates under Ex Parte Order No. 74 to and from points in close proximity to the border line between the eastern and southern groups as defined in the report in that proceeding.

The commission sees no occasion to question the action of the carriers in treating points on the Bristol line of the Norfolk & Western from Radford, Va., to Bristol, as border line points, applying an increase of 40 per cent to the rates locally on such line and to rates between points on such line and points in the eastern group; and 25 per cent to the rates between such points and points in the southern group.

The situation as to the Clinch Valley branch of the Norfolk & Western leading from Bluefield, Va., to Norton, Va., and of the Lexington-Louisville branch of the Cheasapeake & Ohio from Ashland, Ky., to Louisville is similar.

The Big Sandy Division of the C. & O. (Huntington to Elkhorn City) and the line of the Morehead & North Fork should be considered as being within the southern group, subject to 25 per cent increase upon local rates and 33⅓ per cent as to rates to and from points in the eastern group.

In reaching the informal conclusions above indicated, the commission gave consideration to the following paragraph which appears in its report in Ex Parte 74 on page 247:

"In the construction of rates in accordance with these findings it is not intended that the group boundaries should be strictly observed, but the territorial boundaries heretofore recognized should be observed. For example, Richmond, one of the so-called Virginia cities, should continue on the basis which it has heretofore enjoyed."

In many cases local rates between points on the lines above described are and have been subject to the official classification; joint rates between such points and points in the eastern group have been generally subject to the official classification and have been constructed and predicated in a general way with relation to the adjustment in trunk line and central freight association territories. To apply any increase as to traffic between such points and points in the eastern group different from that applicable to the eastern group would create many fourth section violations and require numerous readjustments, many of which may be avoided by the method of applying the increases which has been used by the carriers and is considered informally by the commission not to be at variance with its findings in Ex Parte 74.

Commission and Court News

Interstate Commerce Commission

The Commission has issued its order in the Georgia intrastate rate case, ordering increases in the rates on cotton, cotton linters and brick, corresponding to the increases made in interstate rates.

The Commission has further suspended until April 30, proposed changes in rates for the diversion and reconsignment of fruits and vegetables and other commodities shown in tariffs of various carriers throughout the United States.

The Commission has further suspended until April 21 the operation of certain proposed cancellation of and increase in water competitive rates on lumber, c. l. from various shipping points in the Carolinas, Georgia, Florida, Virginia and eastern Alabama to Baltimore, Philadelphia, New York, and Boston, etc.

The Interstate Commerce Commission has issued its decision in Nevada intrastate rate case ordering a general increase in the rates in Nevada by the percentages previously authorized for interstate rates. The Nevada Public Service Commission had denied permission to the railroads to make such increase.

The Interstate Commerce Commission has issued a decision finding not justified proposed increased rates on lumber from points in the South to Eastern Trunk Line and New England territories. The railroads by tariffs filed to become effective November 22 had proposed to cancel the joint rates designated as water competitive rates, thereby leaving in effect higher commodity rates.

Florida Rates Increased

The Interstate Commerce Commission has issued its order in the Florida intrastate rate case ordering increases in the state freight rates to correspond with the increases in interstate rates authorized in Ex Parte 74. No issue as to passenger fares was involved. The Florida commission had issued an order effective on October 1, 1920, directing an increase in freight rates on the basis of the rates in force prior to the effective date of General Order No. 28 of the director general of railroads, plus 25 per cent, plus a second 25 per cent. This was to avoid the effect of the general order which had increased rates for short haul traffic by more than the general increase made at that time. The opinion, by Commissioner Daniels, says that the effect of this order is to treat Florida as separate and distinct from the other states in the Southern group and to require a different scheme of rate-making which would obviously result in a serious disruption of the rate structure in Florida and indirectly in other parts of the Southern group. Referring to the Interstate Commerce Commission's order in Ex Parte 74, the opinion says that in reaching its conclusions in that case the commission "anticipated that the various state authorities would authorize corresponding increases, as most of them have since done."

Court News

Foreclosure Purchasers of Unprofitable Railroad Cannot Be Compelled to Operate at a Loss

Ordinarily, the owner of a railroad may be compelled to perform the obligations which it has assumed to the public. Having constructed and operated its road under the powers and privileges of its franchise it cannot at its option or caprice abandon it and tear it to pieces. But where a railroad has never earned any surplus above operating expenses or enough to keep it in repair, pay taxes or meet interest charges, the Iowa Supreme court holds that purchasers on foreclosure cannot be compelled to restore the road at a large outlay, and to operate it at a loss.—State v. Blaton (Iowa), 178 N. W. 1.

Assumption of Risk

The Wisconsin Supreme Court holds that the head brakeman of a freight train, late for his train, who attempted to board it when it was moving at 10 or 12 miles an hour, assumed the risk of being thrown under a car.—Ramstrom v. C. M. & St. P. (Wis.), 178 N. W. 239.

Care of Automatic Bells at Crossings

The Indiana Appellate Court holds, in a crossing accident case, where an electric gong installed by the railroad at the crossing did not ring, that knowledge of the railroad that the gong was out of repair and want of knowledge on the part of the traveler, are both essential to recovery for failure to use reasonable care to keep the gong in good condition.—Lake Erie & W. v. Howarth (Ind.), 127 N. E. 804.

Agreement to Extend Time of Confinement of Cattle

The Indiana Appellate Court holds that a contract to ship cattle within a reasonable time was not made a preferential one in violation of the statutes regulating interstate commerce merely because the shipper requested the railroad to extend the time of confinement without unloading for feed, water and rest for 36 hours, as authorized by statute, the agreement to extend the time being open to all shippers.—B. & O. S. W. v. Bower (Ind.), 127 N. E., 458.

Passenger With Intoxicated Driver

The Indiana Appellate Court holds that a member of an automobile party which had been drinking intoxicating liquors, who knew of the intoxicated condition of the driver in time before a crossing was reached to have left the automobile and avoided injury when it was struck by a train, was guilty of contributory negligence, barring recovery; and this whether warning signals were given by the railroad or not.—Kirinse v. Chicago, T. H. & S. E. (Ind.), 127 N. E. 837.

Limitation as to Passengers' Baggage Valid Despite Cummins Amendment

The North Carolina Supreme Court holds that the amendment of Aug. 9, 1916, to the Cummins amendment of March 4, 1915, expressly exempts baggage from the provisions as to an interstate carrier's liability for full actual loss notwithstanding a release; and a railroad's limitation of its liability to $100 in a baggage tariff duly filed and approved, restricts the passenger's recovery to $100.—Culbreth v. Martin (N. Car.), 103 S. E. 374.

"Last Carrier" Road Which Switches Car

In an action for damages to a shipment of machinery which the defendant, amongst others, carried, it appeared that the defendant delivered the sealed car to another carrier, to be switched a short distance to the plaintiff's warehouse. The other carrier received no part of the through freight, but charged defendant $2 for switching. The South Carolina Supreme Court held that the defendant was not the last carrier, and therefore was not chargeable with the presumption that it wrought the damage; and judgment for the plaintiff was reversed.—Southern Textile Mach. Co. 5, Piedmont & Northern (S. Car.), 103 S. E. 475.

Reasonable Notice of Claim Necessary Though Disease Develops After Delivery

A provision in a bill of lading for live stock that a verified statement of any claim shall be filed within five days after delivery at destination, is valid. The Indiana Appellate Court holds that, while the fact that pneumonia did not develop until three days after delivery would be a reasonable excuse for not presenting the claim in five days; this would not relieve the shipper entirely from giving any notice or presenting any claim within a reasonable time; and a failure to give notice or present claim for 75 days was a violation of the contract. The railroad must have an opportunity to investigate as to its liability within a reasonable time and while the cattle were sick.—Chicago, I. & L. (Ind.), 127 N. E. 209.

Foreign Railway News

Chile Asks Bids for Electrification

The Chilean government will receive bids, beginning March 31, for the electrification of the government railway from Valparaiso to Santiago, according to a cablegram from Ambassador Shea at Santiago.

The British Railway Situation

The Ministry of Transport of Great Britain last September appointed a committee headed by Lord Colwyn to examine into the nature and terms of the agreements made between the government and the various carriers, to determine the liabilities of the government under the agreements and whether or not any further steps should be taken to assure that the interests of the state under the agreements was adequately safeguarded. The committee was unable to report on the amount of the outstanding liabilities at the present time. Claims against the government are expected, however, to amount to a considerable sum for arrears in maintenance, abnormal wear and tear and depletion of stores. The committee reported that these claims, which it estimates at about $750,000, can be reduced to an "insignificant figure." This statement is taken by some of the railway officers as an indication of an attitude on the part of the government which gives little promise of satisfactory legislation providing for a return of the roads to their owners in the fall and a general lack of sympathy with their requirements.

China Notes

PEKING.

Revenues.—Revenues of the Chinese Government Railways for 1920 are estimated to aggregate a nominal total of $89,000,000, or an increase of $6,000,000 over the previous year. This is considered very favorable in view of the fact that operations on the four largest lines were almost entirely interrupted throughout July due to military demonstrations. However, the nominal increase will not be realized in cash, for it includes charges for a large increase in military transportation, and charges for grain carriage for famine relief societies, all of which will be accepted as government accounts.

Famine Alleviated.—Early reports of famine conditions prove not only to have been badly exaggerated, but the ability of native means for combating those conditions was under-rated. Perhaps the biggest piece of famine relief work done by any authority or group has been accomplished by the Ministry of Communications. Early in the autumn grain rates into the famine area were reduced thirty per cent and in the reverse direction were advanced by the same amount. The result has been a great movement of grain into the larger centers of the famine provinces, and stable prices. In addition, in spite of an empty treasury, the Ministry granted free transportation to food stuffs shipped by bona fide relief societies, and to relief workers. Construction work was started on the Tsangchow-Shihchiachuang line in Chihli, through the heart of the famine district, on the Cheefoo-Weihsien line in Shantung, and on the extension to the Taokow-Chinghua line in Honan, another famine district.

Railways Assume Risks for Freight.—On January 1, the principal Chinese Government Railway lines began to assume risk of shipment, under special conditions. Heretofore shipments have been accepted only at owner's risk, which necessitated sending of watchmen along with every shipment. On ordinary freight, now, the railway will assume full responsibility at a rate ten per cent in excess of the usual rates.

Metric System Adopted.—On January 1, the metric system of weights and measures went into effect on the Government Railways. All distances and rates are quoted in terms of kilometres. Passenger rates between stations are unchanged, however. Freight rates underwent considerable change on January 1, for with the change to the metric system, new classifications of goods went into effect, uniform on the principal lines. The tapering system of rates was introduced. The "taper" is effective every hundred kilometres, but the rate of taper is temporarily left to the discretion of each line, so that local conditions may be met. Over a distance of 400 kilometres the reductions on the various lines fluctuate from 15 to 25 per cent. Standard rules for passenger and freight traffic also went into effect on January 1.

New Passenger Service.—Beginning January 1, the Peking-Mukden and Tientsin-Pukow lines began to operate a through express passenger train from Pukow to Peking, eliminating the necessity of change and possible loss of connection at Tientsin. This express makes through service from Peking to Shanghai with only one break, the transfer over the Yang Ste river, Nanking to Pukow. A train ferry over the river at this point has been authorized in the budget and is expected to be in service within eighteen months. An express extra-fare train between Peking and Hankow has also been inaugurated. No passes are good on this train and the soldier evil is therefore eliminated. This train is tri-weekly in each direction. A ferry service connecting the Peking-Hankow Railway with the Canton-Hankow line at Wuchang has been established by the former line. January 1, the Peking-Suiyuan line opened an extension of about 40 miles north of Fengchen. It is expected that rails will be laid into Suiyuan by mid-summer.

Railway Funds for Railways Only.—Yeh Kung Cho, Minister of Communications, has secured the approval of the cabinet to a resolution that hereafter "railway funds will be devoted exclusively to railway uses." The first fruit of this policy is the application of the famine sur-charges on passenger tickets and freight charges to the construction of the three railways mentioned above, upon which famine refugees are employed. This has aroused some friction with the Ministry of the Interior to whom general famine relief measures have been committed. The second fruit of the policy has been the setting aside of $250,000 per month out of the revenues of the Peking-Hankow and Tientsin-Pukow railways, to be devoted to the construction of the Canton-Hankow line. C. J. Carroll, chief engineer of the American section of the Szechuan line, has been put in charge of surveys for this new construction.

Bids Asked for Bridge.—The Ministry of Communications is advertising for bids for the Yellow River bridge. The present bridge was originally intended as a temporary structure to last fifteen years. That period has elapsed, and the wheel load of new types of power render the structure unsafe at a speed in excess of eight miles per hour.

New Accounting System.—Because of the multiplicity of new methods coming into effect on January 1, the through billing of goods has been postponed to be effective February 1. Uniform station accounts have been postponed, effective July 1, and uniform store accounts, which were framed six months ago will not be promulgated until July 1. In the meantime the standing committee for the unification of railway accounts and statistics has framed a standard set of forms and rules for engineers on construction, which will be held over until effect has been given to the above. However, most of the lines having occasion to make changes are voluntarily following the suggestions of the committee. On February 1, the "through-traffic" lines will inaugurate standard forms and rules for car distribution and car records. These rules involve the employment of a regular "car distributor," the compilation of "car kilometrage" both loaded and empty, and the direct reporting of car detention to the car distributor. A beginning is made also toward tonnage rating of locomotives, and a record of per cent of total power utilized.

Record Traffic.—A tremendous strain is being put on the Peking-Mukden line to haul sufficient grain from Manchuria to supply the famine area. Manchuria is the only large source of supply, and the Peking-Mukden is the only connecting railway. Old locomotives and 65-lb. rail on the northern half of this line make a severe handicap, but during the four months September to December inclusive, 1920, the tons delivered "inside the wall" were nearly ten times any previous record. Cars average nearly 200 kilometres per day while in this service.

Loan for New Rolling Stock.—Probably the most significant piece of railway financing of recent years in China, is the loan just concluded by the Ministry of Communications with a group of native banks for $6,000,000 to be used for the purchase of rolling stock. It is secured on the revenues of the Peking-Hankow line, and bears interest at 8 per cent. By some this is interpreted to be the answer of China to the alleged terms of the Consortium. This is undoubtedly overshooting the mark. But it probably does mean an intelligent interest in governmental affairs hereafter on the part of Chinese financiers, which will have a salutary effect upon governmental credit as well as expenditure.

Equipment and Supplies

Locomotives

THE IMPERIAL JAPANESE GOVERNMENT RAILWAYS is having 30 locomotives built in Japan.

THE HOKKAIDO KOGYO TETSUDO, Japan, has ordered 1 2-6-2 type locomotive from the Baldwin Locomotive Works.

Freight Cars

THE IMPERIAL JAPANESE GOVERNMENT RAILWAYS' program for new equipment calls for the construction in Japan of 1,500 new cars each year. The construction of 50 freight cars and 50 passenger cars may be authorized in the near future.

THE TIENTSIN-PUKOW, reported in the *Railway Age* of February 4 as being in the market for 300 40-ton all-steel gondola cars, has ordered this equipment through Mitsui & Co., 65 Broadway, New York, from the American Car & Foundry Co.

THE ANGLO-BRAZILIAN COMMERCIAL & AGENCY COMPANY, LTD., Rio de Janeiro, Brazil, reported in the *Railway Age* of January 21, as inquiring through the car builders for 300 low side freight cars, has renewed its inquiries for this equipment.

Passenger Cars

IMPERIAL JAPANESE GOVERNMENT RAILWAYS. See item under Freight Cars.

Machinery and Tools

THE BATAVIA CAR WORKS, INC., Batavia, N. Y., is in the market for a large amount of shop equipment.

THE NEW YORK CENTRAL is inquiring for a 400-ton wheel press, a 6-ft. radial drill, a 48-in. planer, and a 54-in. boring mill, for its shops at Avis, Pa.

THE DELAWARE, LACKAWANNA & WESTERN has ordered a 5-ft. Ryerson-Conradson radial drill, for its Kingsland shops, from Joseph T. Ryerson & Son.

Miscellaneous

THE NEW YORK CENTRAL will receive bids until noon March 28, for its requirements until July 1, 1921, for the line Buffalo and East, of fuel oil, gasoline, kerosene, gas oil and lubricating oil, also turpentine substitute and tallow candles.

THE LONG ISLAND is asking for bids until 2 p. m., March 30, for 3,000,000 to 3,300,000 gal. of fuel oil for use on vessels and boats controlled and operated by the marine department of the Long Island Railroad during the 12 months from April 1, 1921.

Signaling

MITSUI & Co., 65 Broadway, New York, has ordered 21 complete sets of automatic signals from the Union Switch & Signal Co., for use on 10 miles of double track of the Osaki Interurban Railway.

EASTERN RAILROAD EXECUTIVES, Daniel Willard of the Baltimore & Ohio, F. D. Underwood of the Erie, A. T. Dice of the Philadelphia & Reading, A. H. Smith of the New York Central and Elisha Lee of the Pennsylvania, had a long conference with Chairman Clark and other members of the Interstate Commerce Commission at Washington on March 24. It was stated that the possibility of operating economies was under discussion.

Supply Trade News

Carl W. Bettcher has been appointed sales manager of the **Eastern Machine Screw Corporation,** New Haven, Conn. Mr. Bettcher will give his special attention to the expansion of its H & G die head business.

The **Track Specialties Company,** 29 Broadway, New York, on March 1, appointed the **C. H. Small Company,** Monadnock building, San Francisco, Cal., as its agent at that place and **R. J. Glendinning & Co.,** 1102 Newhouse building, as its agent in Salt Lake City, Utah.

The Blaw-Knox Company will establish a sales office in the southwest, with headquarters in Kansas City, Mo., on April 1. **R. B. Randall** of the Chicago office will be in charge of the new territory and offices will be located in the Interstate Building at Kansas City.

Ralph T. Hatch, whose appointment as general manager of sales of the **Reading Steel Castings Company,** a subsidiary of the American Chain Company, with headquarters at Reading, Pa., was announced in the *Railway Age* of March 18 (page 738), entered railroad sales work with the B. F. Goodrich Rubber Company at Akron, Ohio, and was for several years railroad representative of this company. For the past 14 years he has been connected with the sales department of the National Malleable Castings Company, serving this company first as manager of Canadian sales with headquarters at Montreal, Can., and later coming to the Chicago office of the company. At the time of his recent appointment he was serving as district manager of sales for the Northwestern territory, with headquarters at St. Paul, Minn., a position he had held for several years.

R. T. Hatch

Gunni Jeppesen, formerly chief engineer of the Strauss Bascule Bridge Company, Chicago, has joined the Chicago Bascule Bridge Company, Chicago, Ill., as associate engineer. Mr. Jeppesen, who is a graduate of the State Polytechnical Institute at Copenhagen, Denmark, was connected with the Strauss Company for 12 years, from its inception until 1917, and since then has been engaged in industrial plant work as structural engineer of the Leonard Engineering Company.

The Arkansas Preservative Company has been organized by **E. B. Fulks,** president and **John L. Pfeifler,** secretary, to make zinc chloride. The company has established offices in the Carlton building, St. Louis, and is now completing a plant to manufacture zinc chloride at Little Rock, Ark., which plant will be completed in about a month. Mr. Fulks was vice-president of the American Tar Products Company, Chicago, until last summer.

J. Brookes Spencer, assistant to first vice-president of the **Southern Wheel Company,** St. Louis, Mo., has been elected vice-president with headquarters at St. Louis. Mr. Spencer was born in St. Louis on January 15, 1888. He was educated at the Hill School, Pottstown, Pa., and was graduated from Yale University in the class of 1910. In 1917 he entered the service of the Southern Wheel Company at St. Louis and has been with this company since that time with the exception of a year when he served in the United States Army.

Fairbanks, Morse & Co.

The annual report of Fairbanks, Morse & Co for the year 1920 shows a net profit of $2,678,735 for the year, after providing for sinking fund, federal taxes and special inventory depreciation, the latter deduction amounting to $1,650,000. After allowing for preferred dividends, the net balance available for common stock is $2,558,735, equal to $8.25 per share on the no par common stock outstanding. The net balance available for common stock in 1919 was $3,176,862, equal to $10.25 per share on the present capitalization.

Chicago Railway Equipment Company

During the year 1920 the business of the Chicago Railway Equipment Company was the largest in its history, both in volume and in money. While the volume of railway work was 50 per cent of its total business, the profit from that work was only 37 per cent of the company's total profits for the year. Dividends totaling 10 per cent were paid during the year.

No income account was issued, but the following balance sheet was given:

	Dec. 31, 1920	Dec. 31, 1919
Assets		
Property	$1,476,663	$1,325,910
Good will, patents, etc.	793,225	766,757
Inventories	1,700,280	1,236,359
Investments	1,176	1,176
Liberty bonds	549,450	666,900
Accounts, bills, revenue and cash	1,786,158	1,598,490
Deferred charges	3,156	357
Total assets	$6,310,110	$5,595,960
Liabilities		
Capital stock	$2,996,800	$2,993,760
Current liabilities	479,752	306,305
Reserves	303,020	163,439
General reserves	2,000,000	1,500,000
Surplus	530,536	632,546
	$6,310,110	$5,595,690

Western Electric Company

The total sales of the Western Electric Company during 1920 amounted to $206,112,000 as compared with $135,722,000 in 1919. The net earnings for the year, as shown by the company's annual report, were $8,277,414, or 7.2 per cent on the average investment for the year, which was $114,900,000. This compares with net earnings of $5,652,089 for 1919, or 6.9 per cent on the average investment for that year of $81,400,000. Interest amounting to $4,037,645 and dividends amounting to $3,345,000 were paid, leaving a surplus of $894,769.

The unfilled orders of the company at the end of the year aggregated $82,655,000, as compared with $47,442,000 at the end of the year 1919, and $26,265,000 at the end of the year 1918.

The balance sheet, December 31, 1920, follows:

Assets		
Total plant		$37,838,313
Merchandise	$72,209,721	
Cash	7,825,257	
Bills receivable	848,378	
Trade acceptances	1,869,307	
Accounts receivable	44,012,698	
Total current assets		126,765,361
Liberty Bonds		1,193,220
Trustees, employers' bond purchase plan		1,066,751
Sundry investments		2,703,265
International Western Electric Co., Inc.		19,017,286
Grand total		$188,584,196
Liabilities		
Common stock	$57,949,453	
First mortgage bonds, 5 per cent, 1922	15,000,000	
Convertible gold bonds, 7 per cent, 1925	27,000,000	
Total capital liabilities		$99,949,453
General bills payable	$41,550,000	
Bills payable secured by Liberty Bonds	1,200,000	
Trade acceptances discounted	1,082,384	
Accounts payable	14,563,466	
Total current liabilities		58,395,850
Reserve for depreciation on plant	$24,021,005	
Reserve for employees' benefit fund	1,600,000	
Reserve for contingencies	4,617,888	
Total reserves		30,238,893
Grand total		$188,584,196

Bethlehem Steel Corporation

The net income of the Bethlehem Steel Corporation for the year ended December 31, 1920, as shown by its annual report, was $14,458,836, comparing with $15,356,860 for 1919. The value of unfilled orders on December 31, 1920, was $145,286,637, as compared with $251,422,545 at the close of 1919.

The summary of surplus account since the formation of the corporation in 1905 showed total net earnings for that period of $317,798,983. Of that amount $165,797,372 was deducted for interest charges, discounts, special reserves and depreciation. Cash dividends of $41,174,825 and stock dividends amounting to $30,000,000 were paid. The sum appropriated for and invested in additions to property and working capital aggregated $70,000,000, leaving an unappropriated surplus of $10,826,786 at the end of the year.

The report, which is signed by C. M. Schwab, chairman of the board, and E. G. Grace, president, says in part:

"An issue of $2,660,000 Bethlehem Steel Company equipment trust 7 per cent gold certificates was sold in 1920 to provide in part for the purchase of 1,000 70-ton coal cars of steel construction. Another issue of $750,000 Bethlehem Steel Company equipment trust series B 6 per cent gold notes was delivered during the year in part payment for 549 steel coal cars purchased from New England Fuel & Transportation Company.

"Through the medium of the employees' representation plan in the plants of your corporation, relations with the employees have continued on a satisfactory basis. The rapid contraction in the volume of business and the decline in the market prices of all products have necessitated a very large decrease in the number of employees, together with a reduction in wage rates. In this readjustment representatives of the employees have met the management in a fair and cooperative spirit."

The comparative income account for the years ended December 31, 1920 and 1919, is as follows:

	1920	1919
Gross sales and earnings	$274,431,236	$281,641,908
Less—Manufacturing cost and operating expense, including administrative, selling and general expense, and taxes	239,468,865	246,494,159
Net manufacturing profit	$34,962,371	$35,147,749
Interest, dividends and other miscellaneous income	1,389,182	2,293,469
Total net earnings	$36,351,553	$37,441,218
Less—Interest charges, including proportion of discount on and expense of bond and note issues	7,951,203	9,518,206
Balance	$28,400,350	$27,923,012
Provision for depreciation, obsolescence and depletion	13,941,515	12,566,152
Net income for the year	$14,458,835	$15,356,860

Photo by Keystone

Railway Bridge and Castle at Conway, England

Railway Construction

ATCHISON, TOPEKA & SANTA FE.—This company contemplates the construction of a craneway building, with dimensions of 50 ft. by 100 ft., at Topeka, Kan., to cost about $13,000.

CHICAGO & NORTHWESTERN.—This company contemplates rebuilding its grain elevator on the Calumet river, Chicago, which was leased to the Armor Grain Company and which was partially destroyed by an explosion on the evening of March 19.

CHICAGO UNION STATION COMPANY.—This company has awarded a contract for fabricating the structural steel to be used in the construction of the new railway mail terminal building, Chicago, to the MacClintock-Marshall Company, Pittsburg, Pa. The company has awarded contracts to the Fort Pitt Company, Pittsburg, for fabricating the structural steel to be used in building the Madison street viaduct, and in widening Canal street between Van Buren and Harrison streets, Chicago.

ILLINOIS CENTRAL.—This company is accepting bids for two viaducts at Fort Dodge, Iowa, to cost approximately $30,000 each. The company is also accepting bids for the construction of two bridges at Council Hill, Ill., to cost a total of $60,000.

ILLINOIS CENTRAL.—The Groom Coal Company, which was announced in the *Railway Age* of February 11, as contemplating a coaling station on the line of the Illinois Central at Belleville, Ill., has awarded a contract for a 500-ton frame coaling station, to cost approximately $40,000, to the Railway Water & Coal Handling Company, Chicago.

OREGON SHORT LINE.—This company contemplates improvements on its station at Twin Falls, Idaho, to cost approximately $15,000.

UNION PACIFIC.—This company in conjunction with the United States Bureau of Public Roads and the State of Utah will construct a viaduct over the company's tracks and a bridge crossing the Weber river, Riverdale, Utah.

ISN'T IT JUST LOVELY THE WAY OUR TWO BOYS JUST PLAY SO NICELY TOGETHER ALL THE TIME?
PUBLIC
RAILROAD OWNERS
RAILROAD EMPLOYEES
RAILROAD PROPERTIES

Darling in the Chicago Post

Railway Financial News

ALABAMA & VICKSBURG.—*Authorized to Issue and Pledge Bonds and Notes.*—This company has been authorized by the Interstate Commerce Commission to issue $542,900 of 5-year, 6 per cent, promissory notes and $2,423,000 of 6 per cent, first mortgage bonds maturing April 1, 1951, to pledge $543,000 of the bonds as collateral for the notes and $1,880,000 with the Secretary of the Treasury for loans from the revolving fund.

CHICAGO, BURLINGTON & QUINCY.—*Declares Stock Dividend.*—The directors have declared a stock dividend of 54.132 per cent, payable to stockholders of record March 31. The stock dividend will amount to 600,000 shares on the $110,839,100 capital stock outstanding ($100 par value). Northern Pacific and Great Northern together own $109,114,810 Burlington stock. Their share of the dividend will amount to 590,660 shares.

The Burlington was recently granted permission to issue $60,000,000 additional stock as a step to assist the two owning lines to meet the $215,000,000 Great Northern-Northern Pacific joint Burlington collateral 4s maturing July 1, next. As noted in the *Railway Age* of March 4, page 499, the commission refused that part of the Burlington's application which requested permission to capitalize an additional part of its surplus by the issuance of $80,000,000 bonds.

CHICAGO & ILLINOIS MIDLAND.—*Asks Authority to Issue Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue $1,750,000 of 10-year, 7 per cent debenture bonds to be delivered to the Commonwealth Edison Company, Chicago, to refund an equivalent amount of open account indebtedness.

HAMPDEN RAILROAD.—*Receivership.*—By an interlocutory decree filed in the Superior Court at Springfield, Mass., on March 19, William E. Gilbert was appointed receiver for this corporation with instructions to make a complete return of the road's assets within thirty days. Mr. Gilbert is president of the Union Trust Company of Springfield, Mass. The court action was taken on a suit brought against the road by the Hampden National Bank of Westfield, Mass. H. W. Ely, counsel for the road, said that the receivership was for the purpose of winding up the affairs of the corporation.

The Hampden Railroad was incorporated in July, 1910, in Massachusetts. It runs from the Boston & Albany, two miles east of Springfield, to a connection with the Boston & Maine at Bondsville, 15 miles. Upon completion, the Hampden Railroad was to be leased to the Boston & Maine for 99 years at rental equal to interest on the debts of the corporation and 5 per cent dividends on the stock, but as the lease has not been approved by the Public Service Commission of Massachusetts, the road has not been opened for operation, and the Boston & Maine has not assumed any obligations under the lease. The directors of the Boston & Maine voted on December 29, 1913, to buy or lease the road on terms approved by the Massachusetts Railroad Commission, but the Massachusetts legislature on June 18, 1914, defeated the bill providing for the lease. The company on July 4, 1914, filed a suit against the Boston & Maine to enforce its alleged contract liability, amounting to between $3,500,000 and $4,000,000, the approximate cost of the line, but the suit was decided in favor of the Boston & Maine. The case was taken to the Supreme Court on exceptions and an opinion was rendered on June 25, 1919, overruling the exceptions. The petition for a rehearing was denied by the court in the fall of 1919.

ILLINOIS CENTRAL.—*Authorized to Issue Equipment Trust Certificates.*—This company has been authorized by the Interstate Commerce Commission to enter into an equipment trust agreement with the Commercial Trust Company for the issuance of $3,564,000 of 6½ per cent equipment trust certificates for the acquisition of 50, 2-10-2 type freight locomotives and 25, 8-wheel switching locomotives at an estimated cost of $5,941,250.

MAINE CENTRAL.—*Annual Report.*—The annual report of this railroad is reviewed editorially in this issue.

MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.—*Asks Authority to Purchase Line.*—This company has applied to the Interstate Commerce Commission for authority to acquire by purchase the property of the Wisconsin & Northern, which operates 133 miles in Wisconsin, at a price of $25,000 per mile, or $3,339,500, of which $668,500 is to be paid in cash and $2,671,000 in 5 per cent consolidated gold bonds. Authority for the issuance of the bonds is also requested.

NATIONAL RAILWAYS OF MEXICO.—*Annual Report.*—The income statement of the National Railways of Mexico for the fiscal year ended June 30, 1920, does not include any earnings for the operation of the National Railways of Mexico. It shows charges, principally of interest on funded debt and short term notes, amounting to 24,708,498 Mexican gold pesos ($12,354,249 in United States currency) and a deficit balance for the year of 23,557,264 pesos ($11,778,632). The general balance sheet as of June 30, 1920, shows a deficit balance to profit and loss of 169,445,025 pesos ($84,722,513). The funded debt as of June 30 is shown as 407,672,380 pesos ($203,836,190) and among the other items on the liabilities side is 67,324,263 pesos ($33,662,132), representing notes payable which matured in 1915, 1916 and 1917, which were not paid.

The earnings of the lines of the National Railways of Mexico as operated by the government are shown in an exhibit to the executive president's report. They show gross earnings of 73,207,569 pesos ($36,603,785), operating expenses of 46,983,697 pesos ($23,491,649) and net earnings of 26,223,872 pesos ($13,111,936), but, as noted above, this figure is not included as income by the corporation. Subsidiary lines showed operating deficits under the government administration as follows: Vera Cruz & Isthmus, 179,029 pesos ($89,515); Pan-American Railroad, 620,612 pesos ($310,306).

NEW YORK, NEW HAVEN & HARTFORD.—*No Receivership Contemplated.*—In reply to the assertion of E. J. Rich, counsel for the Associated Industries of Massachusetts, that he doubted if anything could save this road from a receivership, E. J. Pearson, president of the New York, New Haven & Hartford, has issued the following statement:

"The unauthorized talk of receivership," he said, "is unfortunate at the present time. Edgar J. Rich is not counsel for the New Haven Road, and, while I do not know what the future may bring forth, I think it my duty to say that no receivership for the New Haven Road is now in contemplation. We hope to get justice in division of rates and labor readjustment.

"We need just a little assistance to turn the corner, and, with everybody co-operating and helpful, prosperity can be restored to New England, not only for her industries, but for her transportation. Coal and supply costs are coming down and more cars will soon be moving.

"It is a pity that people should be frightened out of their railroad ownership just at this point. The New Haven Railroad Company, after charging off all its bad investments, will have an appraised valuation for its property far exceeding its entire indebtedness and its entire share capital at par."

An article and an editorial on the New England situation appear elsewhere in this issue.

PITTSBURGH & SHAWMUT.—*Authorized to Endorse Notes.*—This company has been authorized by the Interstate Commerce Commission to assume obligations as endorser in respect of promissory notes aggregating $1,110,975 and to pledge the notes, together with $1,000,000 of its first mortgage 5 per cent bonds, as security for collateral note to the amount of $1,500,000.

READING COMPANY.—*Iselin Committee Defends Plan.*—The committee representing certain holders of Reading first and second preferred stock, consisting of Adrian Iselin, Robert B. Dodson, Edwin G. Merrill, and William A. Law, known as the Iselin Committee, has petitioned the United States District Court at Philadelphia for leave to intervene. The petitioners ask that the Reading plan be approved as submitted. They represent 89,611 shares of first preferred and 117,786 shares of second preferred, having an aggregate par value of $10,369,850. The committee holds that the plan does not contemplate a distribution of Reading's $33,000,000 surplus, as asserted by the Prosser Committee, but a distribution of assets, to acquire which the preferred stock was originally issued.

WILMINGTON, BRUNSWICK & SOUTHERN.—*Authorized to Issue Promissory Notes.*—This company has been authorized by the Interstate Commerce Commission to issue promissory notes to the amount of $81,000 in renewal of notes about to become due.

WISCONSIN & NORTHERN.—*May Be Purchased.*—See Minneapolis, St. Paul & Sault Ste. Marie.

Dividends Declared

Chicago, Burlington & Quincy.—Stock, 54.132 per cent, payable March 31 to holders of record March 31. Quarterly, $2, payable March 25 to holders of record March 19.

Great Northern.—One and three-quarter per cent, quarterly, payable May 2 to holders of record April 2.

Kansas City Southern.—Preferred, 1 per cent, payable April 15 to holders of record March 31.

Reading Company.—Common, 2 per cent, payable May 12 to holders of record April 19.

Railway Officers

Executive

Ross Beason, traffic manager of the Salt Lake & Utah, with headquarters at Salt Lake City, Utah, has been promoted to vice-president, with the same headquarters, and has been succeeded by **A. V. Kipp,** general freight and passenger agent, whose former position has been abolished.

Traffic

T. E. Harris has been appointed traffic manager of the Gulf & Ship Island with headquarters at Gulfport, Miss.

J. F. Keate has been appointed commercial agent of the Salt Lake & Utah, with headquarters at Salt Lake City, Utah.

R. C. Semon has been appointed commercial agent of the Southern with headquarters at Cincinnati, Ohio, effective March 15.

C. B. Newcomb, west bound agent on the New York Central, with headquarters at Chicago, has been appointed general agent on the Rutland, with headquarters at Chicago.

Stuart A. Allen, assistant freight traffic manager on the Baltimore & Ohio, Eastern Lines, with headquarters at New York City, has been promoted to freight traffic manager, Western Lines, with headquarters at Chicago, effective March 19, succeeding O. A. Constans, deceased.

W. D. Cook, general freight agent of the Georgia & Florida, has assumed jurisdiction over all matters pertaining to the freight traffic of that company, T. E. Harris, traffic manager, having resigned to accept service with another company. **D. F. Kirkpatrick** has been appointed assistant general freight agent with headquarters at Augusta, Ga.

J. B. Graham has been appointed commercial agent on the Gulf Coast Lines, with headquarters at Baton Rouge, La., effective March 1, succeeding C. A. Richardson, who has been transferred to the transportation department. Other appointments effective this date are: **W. R. Butler,** commercial agent, with headquarters at Dallas, Tex., and **S. W. Elder,** who has been transferred from San Francisco, Cal., to Houston, Tex.

Engineering, Maintenance of Way and Signaling

C. C. Haire has been appointed engineer auditor on the Illinois Central, with headquarters at Chicago, with jurisdiction over valuation and capital expenditures, effective March 1.

W. P. Hayes, assistant engineer on the Missouri Pacific, with headquarters at Monroe, La., has been promoted to division engineer on the Louisiana division, with the same headquarters, effective March 15. **R. G. Bush,** assistant engineer in the valuation department with headquarters at St. Louis, Mo., has been appointed assistant engineer on the Valley division, effective March 1, succeeding **N. B. Topping,** who has been assigned to other duties.

Obituary

H. L. Anderson, editor of the Illinois Central magazine, died at the Illinois Central Hospital, Chicago, on March 16, after an illness of three weeks.

H. E. Renick, superintendent of the Colorado & Southern with headquarters at Denver, Colo., died in Los Angeles, Cal., after an illness of two months. Mr. Renick was 59 years old at the time of his death and had been with the Colorado & Southern for more than 20 years. Since 1910 he had been division superintendent.